

AVIATION WEEK

AUG. 10, 1953

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They'll push Cougars beyond the speed of sound, where speed is measured in Mach numbers. From turbo-jet fighters, they may test the piston-powered S2F-1 at speeds measured in knots. Next the Albatross Triphibian. With her, they may shoot landings on snow and ice, or sea, or land.

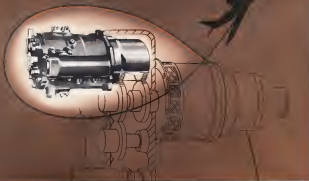
And they'll test fly the revolutionary new Grumman fighter at speeds that would amaze you.



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With the drive and the accessories, which are mounted on one gear, all mounted within the engine gear box, it is easy for the mechanic to maintain, service or overhaul these components. The integral mounting arrangement also reduces possible vibration due to the drive. The Cartridge-Type Drive, like other Drive Types, exhibits high efficiency at all altitudes.

The Sundstrand Cartridge-Type Drive is currently being used on leading military jet engines to provide constant output speed for driving engine accessories and other accessories requiring constant speed. When engine manufacturers first required a constant speed drive to perform these functions, they depended on extremely lightweight, complex models that would be readily accessible. Sundstrand's answer is the Cartridge-Type Drive which mounts directly onto the engine gear box with the input shaft geared to the main

engine drive shaft. With this integral mounting arrangement and with the basic task of driving, reversing and lubricating being performed by the engine lubrication system, it has been possible to meet the exacting requirements of the engine manufacturers. Perhaps the Cartridge-Type Drive is one of Sundstrand's oldest. Drives will account a constant speed problem for you. Write or phone for data on the various types available. Take advantage of Sundstrand's reliable research expert engineering process production



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AIRCRAFT AND INDUSTRIAL HYDRAULIC TRANSMISSIONS, PUMPS, MOTORS AND VALVES • OIL BURNER PUMPS • AIR DRIVERS
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B.F. Goodrich



The weight saved here is still on this airplane

NO MATTER what job the Navy thinks up for Lockheed's Neptune, it always starts out that a lot of compromise has to be taken along. Maybe the electronic search equipment, and/or a lot of added accessories, but wherever it is, it's important. The airplane has been designed through many changes, always keeping up her capacity to carry more useful load.

Some of this weight-saving comes in the landing equipment. From the beginning, this function series has been equipped with B. F. Goodrich wheels, brakes, ones. One of the weight-saving changes on the Neptune is a new kind of brake block. No pins are used. The landing is concerned only a lighter suspension shoe. And the landing bar longer because some of the landing is used.

Another way the landing was made lighter (and better). The B. F. Goodrich

expander tube principle has the basic advantage that loading air in applies equal pressure over the full circle of the drum, giving greater braking power, better load distribution. Today's B. F. Goodrich brake has a new, non-carry tube that gives even more braking power, with air that, not, of course, lighter weight.

Landing on the new brakes are safer, smoother. The brakes respond smoothly and quickly to minimum pressure, other emergency conditions, burst, cannot lock or grab. There are other advantages. Wheeland shoe disengage heat more rapidly. Resistor spring allows the drum wear due to drag. Rolling can be handled with a screwdriver and wrench.

The B. F. Goodrich wheels on the Neptune are light, strong, suspension carriages. They are the lightest weight possible for the loads carried. These

developments for greater safety and less weight are typical of continuing product improvement at B. F. Goodrich.

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Are you taking full advantage of the constantly growing range of forgings? Typical is this aluminum alloy forging with a projected area of more than 1,000 square inches used in the wing structure of a modern military bomber. Such forgings are today made possible by the use of the largest die forging press in America (18,000 tons). For hammer or press die forgings of aluminum, magnesium or steel, Wyman-Gordon engineers are ready to serve you—there is no substitute for Wyman-Gordon experience.

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 FORGINGS OF ALUMINUM • MAGNESIUM • STEEL
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NEWS DIGEST

Domestic

Casualty plane production will continue at its present high level through the next months of 1954 (Aviation Week Aug. 1, p. 13). Adam DeWitt C. Ramsey, president of Aerojet Inc. in Azusa, California, said he sees the picture as subject to change by a stroke of the Joint Chiefs of Staff.

Flying Tiger Lines has leased four DC-6s to Northwest Orient at a rental rate of \$18,000 a month per plane and has sold delivery rights of two other DC-6s to Japan Air Lines for \$1.2 million plus \$250,000 to make up for deposits already paid on the transports. NW's DC-6s are now being converted by Douglas Aircraft Co. into cargo to passenger configuration at Tico's expense. The first three are scheduled for delivery this fall, the fourth next spring.

USAF B-47 that holds the trans-Atlantic speed record last week set a another long-distance mark, for jet aircraft, flying 4,650 mi. from Portland, England to Miami AFB at Tampa, Fla., in 9 hr. 33 min.

Big Gen. L. W. Miller, World War II and chief of USAF's Budget and Fiscal Div., has indicated his opposition to any modification of Consolidated Vultee Aircraft Corp., San Diego. If accepted by Congress's board of directors, Miller's resignation will become effective Nov. 30. For the moment, his duties will be assumed by C. V. Turner, treasurer, and D. T. Fisher, controller.

Russian MIG-15s shot down a USAF F-101 (ib. 29) approximately 40 mi. off the coast of Siberia, the third U. S. plane destroyed by Soviet fighters in the Far East during the past nine months. Only one specimen of the 15-ton craft was recovered. Remains left behind showed 12.5 percent of the aircraft, claimed the R-10 was captured near Siberia.

American and Northwest Orient Airlines have signed new agreements with Air Line Pilot Union that provide wage increases. The ALP contract expires Jan. 31, 1955. NW's agreement runs to Jan. 1, 1955.

U. S. District Court in Washington, D. C., has rejected North American Aviation's plea for an order restraining CAB from holding hearings on charges that the national air carrier group violated regulations by operating scheduled flights. But Judge Henry A.



Scorpion Tests Its Sting

USAF's Northrop F-80D Scorpion is undergoing a special weapons proving program to establish the reliability of its rocket motor and for control system. The craft carries a large number of 2.75-in. folding-fin missiles in each wing pod, which are

Schwerdtfeger approved a stipulation that will delay the hearing until after the airlines contest the decision in Federal Court of Appeals.

Mr. Gen. W. R. Waldhagen, former director of the Joint Tactical Air Support and Joint Air Transport Boards, has retired from the Air Force after 31 years of service. He will join General Aviation Corp. as general manager of the Burbank, Pa., operations.

Legislation setting up a 12 member advisory committee on nuclear control, to make recommendations on regulation of activities involving the weather, including aerial cloud seeding, is at the White House for Presidential signature.

Financial

Eastern Air Lines made a net profit during the first half of this year totaling \$2,452,311 or \$1.14 a share, compared with the adjusted net of 63 cents a share for the same period of 1952. Gross revenues were \$70,908,974, a 29.5% increase.

Fairfield Engine & Airplane Corp., Hagerstown, Md., reports net earnings for the first six months of 1953 were \$2,108,000, an increase of \$480,000 over the first half of last year. Sales and other income totaled \$84,395,400, (\$73,377,000 for the same 1952 period).

small and fuel using missiles driven. The trials are being conducted from the Navy's Air Missile Test Center, Ft. Meigs, Calif. The F-80D fires its missiles at various high altitudes at a 4-ft-10-in. lower level by a North American B-45 jet bomber.

Bell Aircraft Corp., Buffalo, N. Y., made \$1,891,000 in net income during 1953's first half, 111.1% higher than \$894,104 for 1952 period. Sales were \$71,932,000, up 25%.

Borch Aircraft Corp., Wichita, Kansas, announced a net income of \$1,490,286 from sales totaling \$74,565,642 for the first nine months of the current fiscal year, compared with \$66,983,967 in sales during the same period a year ago. Backlog amounted to \$110 million.

International

Air France Constellation plane landed last week on the southwest coast of Turkey after the proleptic periphery of the Aegean (Aviation Week Aug. 1, p. 13). The 41 passengers were killed.

Trans World Airlines has signed a three-year contract to continue operating the government-owned Egyptian Air Lines.

Citicut Airways DC-3 crash landed on the east coast of the Persian Gulf last week, injuring 12 persons.

India's government took over operation of the nation's main commercial airlines Aug. 1, assuming direct responsibility for 124 aircraft on domestic and international routes.

5

INDUSTRY OBSERVER

►The Correspondence Committee of the Air Coordinating Committee, headed by Col. William Baskin of the Army, recently made the commit to a series of tests to industry plants regarding emergency projects in development. Particular along are the Bell's long-range Model 209 development and the McDonnell XLR-24 with turbojet engine, both of which may be ready for flight about year's end. Committee requested mockups at both plants.

►Cessna Aircraft's board of directors is considering an helicopter system as attracting considerable interest in the industry as a means of making a cockpit capable of higher speeds than today's machines.

►Crash deceleration data obtained by NACA from actual tests with C-47 type fighters indicates that peak loads of as high as 50-55G are experienced in 0.2 seconds and more decelerations at 25G for .65 seconds. This corresponds generally with the computations by Hugh De Haven at Cranfield Research at Cranfield University, Bedford College which indicated 20-30G loads, judging from impact velocities and stopping distances reported for actual accidents.

►Watch for the Boeing B-47C two-jet bomber to come back into the picture, previously with Atlantic VTI engine. The experimental aircraft virtually has been complete at Wichita for some time and Boeing engineers are still enthusiastic about its performance potential. There is some indication Air Force may revive the project, previously shelved because of the true facts required to get it into production as compared to the in-jet B-47C now riding off the Wichita line.

►Douglas XF8D-1 that flies across the country made three stops enroute to Patuxent Naval Air Test Center to stay behind a foot, but some was attributed to mechanical difficulties. The experimental airplane was joined with a Westinghouse J40 engine (not the Pratt & Whitney J75 as reported here last week). The J75 is going into production version at the Skunk. The fighter is expected to start its current problems as soon as preliminary tests on Patuxent runway are completed.

►Recent reports on flight including developments indicate that the probe design method still is growing pains on the Flying Boom system. Boeing's KB-47 jet tanker which has gone to Eglin Field, Fla., and the new Convair B-36 converted tanker are using probe-dropper. More advantage appears to be in greater regularity of making contact.

►Medium board inspection of the new Convair two-jet trainer Model 145 is scheduled for September in Wichita.

►Raytheon reference recently disclosed in congressional testimony that the number of Convair B-36 intercontinental bombers completed and still being finished up stands at 145 planes.

►Convair recently has run tests on a wind tunnel investigation designed for measuring recently the fuselage shapes and properties of the B-36 bomber in flight from a remote altitude base in the air cabin. Preliminary tests were successful that two concepts and a number have been ordered for additional study at the facilities.

►A new arrangement for airport surveillance radar antenna should eliminate highly sensitive rain clutter (reflections from windup) that obstructs aircraft shape during rain storms. The device enables the operator to switch the radar from its normal radial (or horizontal) polarization to circular polarization, which doesn't affect airplane echoes but prevents rain drop echoes from getting back into the receiver. The device was developed by Airborne Instruments Lab., Missisquoi, N. Y., under Air Navigation Development Board contract.

►Recent trend in rotary-wing aircraft toward increasing need for addition of this type isn't new. It was the original conceptual approach to the rotary wing problem used by Juan de la Cierva in his autogyro. Autogyro manufacturers later took off the wing, and direct control wingless gyro.

WHO'S WHERE

In the Front Office

Y. G. Prasad is vice president and general manager of Standard of Canada, an aircraft and ship up in Toronto by Inland, Inc., 11 Worth. Other officers: W. R. Cook, vice president, and N. E. Rabin, secretary-treasurer. G. W. Clark is president of both lines.

A. F. Kishin has been appointed vice president-administrator of Jule Aircraft Corp., Glendale, Calif. Also promoted: F. E. McCarty, vice president engineering; E. J. Kersch, vice president manufacturing; Charles E. Barnes, vice president and manager of the Standard plant; S. B. Houser, manager of Glendale plant and Riverside facility; and E. M. Eshbach, production manager.

Dale A. Liddy has become vice president sales and engineering of Hytek Inc., Inc., Buffalo, Calif.

Reg. Gen. Stanley E. Rindholm (RVAAC) has been promoted to vice president of Rosen Inc., Newport Beach, Calif.

Norman J. Bunka is now vice president of Everett Aircraft Co., Elkhart, Indiana.

Promotions

Joseph Mac, Jr., has been appointed assistant manager of The American World Air Corp. Other promotions: Stanley B. Kraft, sales assistant; vice president engineering, and William W. Lewis, assistant vice president manufacturing.

Robert W. Danner has been named acting manager of Douglas Aircraft Corp.'s Company and Louisiana, Inc., Dallas, succeeding Robert S. Acme, who recently resigned as A. F. Stone fellowship for one year of study at Northwestern Institute of Technology. G. W. Weyrich is now manager of materials and T. A. Matthews has been appointed acting manager of planning and control of CAC.

Edward L. Pinner has been promoted to controller of Convair's Ft. Worth Div., is planning J. C. Pinner, who resigned to join other lines. Other changes: Eric G. Hill, assistant director controller; D. L. Waffner, budget manager; and A. S. Cooper, chief engineering administrator.

Donald O. Shandall has become chief pilot of North Central Airlines, succeeding Charles W. Natus, who resigned to return to regular line flying.

Changes

Shelby A. McMillan has joined Jack H. Meyer, Inc., Cleveland, as director of advertising and public relations.

Arthur K. Tallante has become assistant manager of Dumas Helicopters, Inc., Dallas, Texas.

Min Daggett, Jr., a new member of the managing staff at Texas Aircraft Corp., Dallas.

Steven L. Berglund has been appointed a staff engineer for special products at Clifton Precision Products Co., Clifton Heights, Pa.

GUIDED MISSILE TESTS AT SEA

"Regulus Launched"

Recently announced by the Navy, the Regulus guided missile is launched in a flight test at sea. Chance Vought Aircraft, builder of the launch carrier and launch system, announced the Regulus design in 1947, first flew the missile in 1950, and is now beginning production.



Chance Vought Aircraft

DAKOTA, TEXAS

ONE OF THE FOUR DIVISIONS OF UNITED AIRCRAFT CORPORATION



Wright Brothers pioneers in piston power in 1903



marquardt pioneers in jet power in 1953



The Institute of Aeronautical Sciences selected Marquardt engineers to produce the replica of the original Wright Brothers engine for permanent display at their Dandee Aeronautical Museum.



Aviation has come a long way from the piston powered craft in 1903, pioneered by the Wright Brothers, to ramjet speeds of mach 4. Marquardt has been the pioneer in the research and development of ramjets, afterburners, air turbine accessory drives and thrust controls of advanced design. These units are currently in production to meet your requirements. Let us send you our illustrated engineering manuals.



ATTENTION ENGINEERS—Write today for full information concerning your future with Marquardt.
Van Nuys, California

AVIATION WEEK

VOL. 38, NO. 6

AUGUST 18, 1963



CONVAIR 440, like this United Air Lines plane, could be fitted with turboprops to extend life. Second seating would result in



INTERFERENCE VERSION for short-haul service. Eight additional seats are located in the forward section of cabin.

U. S. Challenge to British Viscounts:

Convair Will Convert 340 to Turboprop

- New transport is scheduled to be ready by late 1955; program expected to stretch life of series into 1960s.
- T56 kits will be available for conversion of present airline models at less than \$350,000 per plane.

By Robert Bots

Convair has moved to match the economic challenge of British jet transports with an intensive technical development and sales campaign aimed at extending the life of its Model 340 series design well into the era of turbine-liner operation.

Spurred by J. G. Zevitz, veteran American Airlines executive and now Convair's director of sales and contracts, the 340 campaign is aimed principally at competing with the British Viscount transport series in the world airline market.

- Two Phases of Development—Convair

firmly believes there is an overall shortage of modern range turbine equipment. To capture that market it is offering a two-phase technical development program for the basic 340 airframe.

► First, an improvement program on the current turbo-powered 340s offering a passenger capacity increase from 33 to 37½, a 15 mph increase in cruising speed, and a marked reduction in fuel costs. These improvements will be available in 1960 operations during the next six months.

► Second, conversion of the basic 340 airframe to turboprop power by late 1955.

Convair officials believe this program

will stretch the profitable airline life of the 340 series into the 1950s and provide an owner with an opportunity for a very low capital outlay of this equipment over an eight-year period compared to the cost of purchasing new jet transport equipment.

► Speed Plus Comfort—Major airline interest is centered on the turboprop conversion program. Many key airline executives—including G. A. Searby, president of American—recently have begun looking toward turboprop-powered transports as a better solution to airline problems than turboprops.

These airline operators find the turboprop offers a lot of the speed and passenger comfort available from jet transport power with little of the economic disadvantages and operational unreliability of the turboprop.

► USAF Boost—Convair's interest in the turboprop also was given a strong boost recently by the USAF decision to finance a series of turboprop trans-



SHLINGER tried to engine exhaust stacks is designed to reduce cabin noise level.

port prototypes, making existing airplanes to new turboprop models.

Al Finner will sponsor conversion of two standard 340 airplanes to take Allison T56 turboprops, each rated at 3,730 equivalent shaft horsepower.

These T56-powered 340s will be designated YC-119s and are scheduled to delivery to USAF next spring. They will use Autopacstart propellers. IP-4 fuel and synthetic oil probably will be used in the T56.

► **3500 Mph Top-Refueling Fuel & Water Aircraft** 32,500 turbo engines now powering the 340 with Allison T56 will boost 1940 power from 3,800 to 7,300 equivalent shaft horsepower.

Cracking speed will increase from 275 to 315 mph. The YC-119 will have a top speed of 350 mph and a maximum cruising altitude of 30,000 ft. Best cruising altitude will be approximately 20,000 ft, where a cabin pressurization of 5,000 ft altitude can be maintained.

Cabin weight of the turboprop 340 will increase from 47,000 to 57,500 lb. Considerable improvement in island and climb characteristics are expected from the YC-119.

► **T56 Conversion Kits—Allison expects to get commercial certification for the T56 by the Civil Aeronautics Administration in the fall of 1976.**

Delivery of commercial T56 engines for the Conquest production and T56 conversion kits for turbine operators is scheduled for the first quarter of 1978. The conversion kits will enable airlines operating 340s to make their own conversion to turboprop power.

Total conversion cost, including labor, is expected to be less than \$170,000 for each aircraft. The kits will include propellers, new mufflers and engine instrument and control systems.

All 340s built by Convair have been converted to take turboprop power. Convair regularly does structural modifications will be required for conversion.

Convair plans to use a separate pro-

cession system and has applied earlier proposals to blend air from the turboprop compressors for cabin pressurization.

► **Increased Power—The T56 is expected to bring commercial service with an allowable overhead interest of 400 hours. The engine is a more powerful development of the Allison T40 design, which has been flying in commercial service in a Conquest 340 aircraft for several years.**

Both the T56 and T58 use single power sections in contrast to the Allison T40 and T54 developments that use two power sections in a single propeller shaft. The T56 also is scheduled to power production versions of the Lockheed C-131H military cargo transport ordered by USAF.

► **Island Improvements—With full scale conversion to turboprop power, the 340 in the field on the Conquest production line scheduled for early 1978.**

► **Engine weight to 40,200 lb. from its current 42,800 lb. Island 340 configuration tests was made at the higher gross weight.**

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They are involved in several development programs in being offered the 21 airlines that are operating or have ordered turboprop Convair 340s. In addition:

► **Reduction of cabin noise by installation of engine exhaust stacks. Convair expects to begin delivery of CAA-certified exhaust kits in the fall. The company has experimented with its latest built by Moen and the Industrial Special Aircraft Corp., both of Bedford, Conn., but plans to install the SSC equipment. Convair reports the planes cut 340 cabin noise to the level of a DC-6 interior.**

Initial engine experiments were conducted on 340s operated by Bonair Airways and United Air Lines. Conversion kits are distributed to passengers on a 340 equipped Bonair 140 as part of a Dallas test flight.

Have you ever ridden on a 340 before?

If so, do you notice any difference in this one?

Of the 115 passengers who had ridden 340s before, 160 wrote that they noticed the Bonair plane was much quieter.

Cost of the silent ride is expected to be less than \$200 per aircraft, a finding of the silent-ride test. The aircraft is a 340 fitted with sound-absorbent material surrounding the exhaust stacks. They reduce noise level of the stacks and deflect the remainder away from the cabin.

► **Engine replacement to add 15 mph cruising speed by reducing airplane drag. The drag reduction program is in study now, when complete, will be available in the form of modifications kits. Among modifications already in demand are replacement of the engine on steep rolls on takeoff slots in the loading area of the wing and a redesign of the wing flaps.**

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J. G. ZIEVLY leads CV-340 campaign.

Viscounts for U.S.

Victor Armstrong says his turboprop Viscount can operate in the U.S. around 12.5 cents a direct cost of one cent per seat-mile, versus 16 cents for a jetliner.

A Victor Viscount, armed with the Viscount 12.5, is a 12.5-cent aircraft. The cost of one cent per seat-mile, versus 16 cents for a jetliner. The cost of one cent per seat-mile, versus 16 cents for a jetliner. The cost of one cent per seat-mile, versus 16 cents for a jetliner.

The group is considering formation of a national association that could protect the interest of small industries doing thousands of Air Force contracts, according to Victor Armstrong.

► **New York—Victor Armstrong, 177 mi. Black time 83 hr., payload 13,156 lb., cost 1.13 cents per seat-mile.**

► **Albuquerque—Kearney City, 751 mi. Black time 2.62 hr., payload 13,156 lb., cost 1.13 cents per seat-mile.**

► **Minneapolis—Kearney City, 177 mi. Black time 4.23 hr., payload 10,766 lb., cost 1.04 cents per seat-mile.**

larger and firmer engine competitors.

The first 340 with seat tracks is due all the Conquest line late this year to delivery to KLM Royal Dutch Airlines.

► **Quick Conversion—Seat tracks allow quick conversion to high- or low-pressure capacity and to combinations of passenger and cargo space. Cost of the seat track modification on an aircraft is about \$5,000 per aircraft, including labor.**

► **Trucks are built by Boeing-Lane Corp. of Beverly Hills, Calif., and the seats by Hamilton Tool and Engineering Co. of Los Angeles.**

Convair has sold 204 Model 340s to 21 airlines and has an option for seven more. More than 100 of the planned production of 199 planes already have been delivered.

► **Sales Growth—The company scheduled production of 61 Model 340s without any firm orders in its backlog at the end of the year.**

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Small Firms May Break With AIA

Subcontractors charge association gives no protection from USAF cutbacks; new organization is considered.

By William J. Coniglio

Los Angeles—Subcontractors are being hit by Air Force cutbacks. AIA, the Air Force Association of America, is a group of West Coast firms, associations and subcontractors associations are being hit.

The group is considering formation of a national association that could protect the interest of small industries doing thousands of Air Force contracts, according to Victor Armstrong.

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"AIA primarily is a representative of the aircraft manufacturers," said a spokesman in one of the small companies. "We have to negotiate to protect ourselves."

Those attending the meetings have been divided in their feelings about the purpose of such a group, according to reports. Some have argued it should be a group of small industries and not a group of small industries.

The question is whether it would be successful in getting West Coast firms and associations to work together. "I don't think a little group of West Coast manufacturers could do my good. It would have to be national."

Support for the move will be sought from small manufacturers in other parts of the nation and also from USAF, according to one source.

► **Costs—Those questioned said such an association of firms, associations and subcontractors associations might work for.**

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after the prime manufacturer loses his heavy financial outlay on this price.

It is my opinion on the basis of my experience as a plant representative at some of the major companies, that they have terrific efficiencies," Bailey declared.

Independent small business organizations should be given as much of a break as possible because of the effort they are operating and because of the healthier climate it will create in the industry.

► **Impaired Position**—A number of small manufacturers who have expressed interest in the group will be situated to attend future meetings, according to Bailey.

Those who attended report that talks thus far have been informal with no decisions reached.

Next session is scheduled to be held this month.

The meetings have been productive of nothing less than a lot of discussion," said one manufacturer. "Plans should be lined up."

The spokesman for an industry association expressed the belief that the association should be limited to sub-contractors who design their own products, claiming that who merely do the shop and assemble work for the industry component.

"The others have no place in this," he said.

The attitude is indicative of the contractors within the group itself. But there was no controversy over this aspect as they agreed the position of the subcontractor within the aircraft industry.

Air Power Funds for Fiscal 1954

New funds for Air Force and Naval Aviation for fiscal 1954 are finally approved by Congress total \$13.4 billion, or \$6 billion less than recommended by former President Truman and \$700 million under President Eisenhower's estimates.

(Figures in billions of dollars)

	1953 fiscal year	Truman budget recommendations	Eisenhower recommendations	Appropriated by Congress for 1954 fiscal year
Aircraft and related procurement	\$11.7	\$ 6.7	\$ 3.3	\$ 3.5
Major production outlays other than aircraft	908	908	625	608
Maintenance & operations	540	433	370	315
Military personnel	530	536	530	518
Research & development				
aircraft	329	197	471	440
Naval personnel	818	818	815	815
Air Materiel Command	136	178	147	147
Contractors	.031	.051	.051	.051
Total	\$18.0	\$14.1	\$11.2	\$13.4
NAVAL AVIATION				
Aircraft and related procurement	\$ 3.45	\$ 2.23	\$ 1.40	\$ 1.52
Aviation operations (For aircraft and development, the program)	961	3.91	930	943
	(5.175)	(5.399)	(5.175)	(5.197)
Total	\$ 6.61	\$ 3.24	\$ 3.37	\$ 3.52
Total for Air Force and Naval Aviation	\$25.4	\$19.4	\$13.4	\$13.4

Final Air Budget: \$34.4 Billion

The flow of orders that has been building up the aircraft industry's backlog since the start of the Korean war will also demand under the \$14.4 billion defense budget for fiscal 1954, but the flow of money for defense will also decline slightly.

► The \$4.6 billion provided for aircraft and related procurement by Air Force and Navy for the current fiscal year is less than a third of the \$16.1 billion provided for fiscal 1951, which ended June 30. The \$16.1 billion total is divided: USAF, \$13.5 billion; Navy, \$13.3 billion. This is \$8 billion less than USAF had in '51, \$1 billion less than Navy had.

► But USAF and Navy spending for aircraft and related procurement is expected to rise at a \$2.4 billion a month rate through December, then taper to a \$2 billion a month level in the last six months of the fiscal year. The present expenditure rate of \$1.1 billion a month rose from a \$1.6 billion a month level of a year ago.

► Three Shows—This is how the money

will come: 20 years' accumulated savings will provide flight pay without payment in flight time. The House set a 45-hour ceiling, which was vigorously protested by the services as inadequate to keep up proficiency.

► A loss was claimed on preferential prices as defense contracts are lower on price or economic distress areas. All countries objected, however, that the preferred down, winning, finally accepted still permits defense area contractors to profit for help in order to channel work into their plants.

► A \$35-million cut in USAF's research and development funds stood. House made the cut in Wilson's \$475 million budget recommendations, and Senate attempts to have it returned failed. An \$18-million cut in the \$175 million recommended by Wilson for research and development of Naval Aviation was also made by Congress.

Kaiser Aluminum Gets Heavy Press Aid

Kaiser Aluminum & Chemical Development finally introduced in the Air Force heavy press program last week. USAF promised further financing for the addition to Kaiser's Holtroppe, Md., plant in order to have the remaining \$500 million in costs, parts which Kaiser had left after the Air Force press program was cut from 17 to 18 presses June 15.

With the cutoff, Air Force announced that firm shift for extensions must provide housing for the presses in order to keep them. Affected was Kaiser Aluminum, Reynolds Metals Co., and Harvey Machine Co.

► New House—Since June, USAF has been negotiating with the firm concerned to determine if they could afford to finance housing themselves and then keep their presses. Otherwise, Air Force was repeated trying to find new hosts for the presses.

Take toll on industries, and Kaiser is the first firm to receive definite word on its press future. The Holtroppe, Md., plant estimates for housing in 2,000-ton cradles at about \$100,000 each, company officials report. Air Force already has spent \$4 million on the Kaiser addition. When completed it is expected to cost \$12 million.

Reynolds Metals is known to look with disfavor on spending its own funds for housing on Air Force project Reynolds is scheduled for two extruders, at 2,000- and 12,000-ton press, originally scheduled for Phoenix, Ariz. Last week it looked as if Reynolds would lose its two presses and they would go to Kaiser and to Harvey's Tacoma, Calif., plant.

► Harvey Press—Harvey reportedly is a deal to house its scheduled \$3,000

ton extruder, provided Air Force will retain one of Harvey's two logging presses which were cut from the original program. Harvey originally was slated for a 15,000- and a 21,000-ton large press.

Aside from the Kaiser Aluminum losses, however, the status of the other three extruders still is questionable. Pending decisions by Assistant Air Force Secretary Roger Lewis. Lewis reportedly intends to keep the heavy press program at 10 presses.

No 'VJ-Day' Type Slash, Says McNeil

Assistant Defense Secretary Wilfred J. McNeil predicts there will be "no VJ-day" type of wholesale cancellation of aircraft orders this fiscal year.

At a press conference last week, McNeil, Defense Department Comptroller, elaborated on an earlier statement which was made by Defense Secretary Charles K. Wilson (Aviation Week Aug. 5, p. 13).

Peering into his crystal ball, McNeil says he saw nothing to change the present outlook of steady increase stocks must be built up for expenditures remain. "Whether the year either for Air Force or Navy," McNeil says he knows of no report aircraft will be affected by the trace or for "any other reason" this year.

The serious defense budgetary outlook that the new Defense Department, though worried from its first budget asked in Congress, is noticeably lighter with its trimmed-down \$14.4 billion fiscal 1954 budget.

► Defense Money—Biggest single solution in the entire Departmental budget, from which Congress carved \$1.6 billion, he pointed out, was the 16% cut in the \$250 million spent for research study and facilities. Since that item was based on groundwork and no specific work involved, the cut would not be felt, he maintained. McNeil adds the doesn't know specifically how the \$250 million will be spent, "but it probably will be sufficient this year."

As to the effect of the Korean truce, McNeil says, "No one in the building (Pentagon) today really knows what the truce will mean," as far as defense spending is concerned. He seems to share the widespread opinion that the truce signaling did not necessarily eliminate the possibility of renewed warfare.

► Future Savings—Presently consists of limitations this fiscal year, however, would mean a possible \$1-billion saving in spare parts, combat pay, fuel, transportation and clothing.

Amortization—\$100 million a month in Korea—obviously also will be used, McNeil says. However, ammunition production will not be cut unless absolutely or suddenly because stocks must be built up for expenditures remain.

► Effect—McNeil says that, in effect, no production change is expected when products are "good technically." In a few cases, some of the industry might drop a shift or two in order to do a production in that field eligible.

"Wilson (Defense Secretary Charles K.) wants to maintain the Defense Department without unduly disturbing industry in the process," he explains.



A formation view of four De Havilland Canada Otter light transport that have been ordered by the Royal Canadian Air Force and the United States Air Force. The Otter is a huge success to the DHI. Four and a powered by a 100-hp P&W R3100-Warp. It has a gross weight of 7,500 lbs. and a empty weight of 4,100 lbs. in a cargo version. Top speed is 160 mph.

OTTIES IN FORMATION



Al Koch



Ernest Hensley

Hensley Out, Koch in Safety Post

By Alexander McQuay

Two months after Civil Aeronautics Administrator Fred B. Lee decreed to AVIATION WEEK that he was replacing Aviation Safety Director Ernest Hensley with his 60-year-old former chief, Al Koch, Lee reversed himself and announced the switch effective Sept. 1. Last week's reshuffling of the aircraft-critical Office of Aviation Safety is the latest move of a CAA reshuffle that is expected to lead to further changes.

Meanwhile, observers find that Commerce Undersecretary for Transportation Robert Murray is the dominant figure in CAA. While the administration is expected to continue to hold its post, the real policy decisions are being handled down by Murray to Lee in secret.

■ **Last Laugh—Koch's** assignment to his old post was viewed as a "let who laughs last" strategy by CAA observers, who recalled that Hensley entered aviation in 1949 during the Reuter administration to get the post when it was "up for grabs" in an earlier reshuffle.

Replacing Koch as administrator of the International Region is his deputy, Frank C. Stone, 34, one-time "Tampa World" Airlines pilot and former trade representative of the University of California. Stone was a Randolph Field Air Corps pilot graduate of 1934 and has been with CAA since 1940, principally an international work-assignment for three years in setting up CAA field offices in various parts of the world.

He has been deputy of the International Region four years, had an active role in setting up CAA field offices in various parts of the world.

■ **The Semi-Infamous CAA** accused by Hensley had been spawning widely the criticism of his office and had been asking for his new assignment as deputy administrator of the South CAA Region in Honolulu since only in the spring, before Lee's confirmation to succeed administrator Charles Hensley.

These sources say that Koch had been watching Hensley's descent while enjoying the comparative quiet of the International Region. It is understood that he is returning to the Aviation Safety "hot seat" at Lee's specific direction and with less than unqualified enthusiasm.

CAA Reshuffle

CAA Administrator Fred Lee last week officially announced the CAA organization in a reorganization of responsibility and functions.

Observers predicted, observation the Regional Planning and Evaluation Div., manufacturing, facilities engineering branch and the facilities construction branch into a facilities establishment branch, eliminating several aviation safety activities in the four continental regions but increasing them in Regions 5 and 6 (Alaska and Hawaii), eliminating the Plans and Performance Standards Div., of the International Region. Additionally, an aviation medic I branch at the Aeronautical Center, Glendale, Calif., established the Establishment Engineering Div. and the Maintenance Engineering Div. of the Office of Federal Airways into an Airways Engineering Div.

■ **Industry View—Washington** aviation industry executives received the news of Hensley's transfer with favorably than the announcement of his successor. Koch's several previous years of duty in the same Aviation Safety post mostly have been brief intervals between other assignments. Paradoxically, that he will not stay in Aviation Safety very long in time, rather.

With the deputy post in the Office of Aviation Safety still unfilled, this will be the opportunity to watch the spot again the changing show its whereabouts is hoped by Koch's critics, who also Koch handles the Aviation Safety recovery and reorganization of functions.

■ **More Delegations—Administrator** Lee says Koch had a large share in planning the recent delegation of responsibility to industry in the International Region and expects him to follow the same line in reorganizing Aviation Safety functions. Koch's experience with aviation inspection (which in CAA terminology is regarded as synonymous with aviation safety) goes back to 1931, when he became an administrative inspector for the Department of Commerce. In 1938, he was chief of general inspection and three years later became director of safety regulation. After two years' service in the Air Force in World War II, he returned to CAA as supervisor in foreign aviation inspection and before becoming Assistant Administrator for Aviation Safety in January 1957.

A year later Koch was transferred to head a district office of Program Planning and Evaluation, but was later shifted to start to the Aviation Safety post (which), administrator D. W. Keating moved Hensley from deputy to the top post. Koch was assigned to head the International Region. Koch was a World War I pilot. He was vice president of Midwest Aircraft and a district sales manager for Stearns Aircraft before his Commerce appointment.

■ **Third to Go—Transfer** of Hensley will mark the third high-ranking Aviation Safety man to be transferred out of the Washington office since administrator Lee took over. Previously, Hensley's deputy, William D. Starnes, Acting Chief of Aviation Engineering, Owen Wilcox, was assigned to the Kansas City regional office.

William H. Wells, was accused as emergency chief manager for Kalamazoo, a division of Washington shortly, and a new deputy chief engineering head, Waldemar A. Kilgus, former head of CAA Aviation Safety Division in the Los Angeles Region, and recognized as one of the best qualified inspectors in cockpit engineers in CAA, already has reported to assume his new duties.

While details of the reorganizations in Aviation Safety will not be firm until



Frank C. Stone

Koch takes over, it is understood that he will involve, in general, continuation of present operations in many respects, adhering at the same time economy cuts necessary to stay within the CAA outlined budget, eliminating consider-

able delayed work now done in Aviation Safety as focus of a sampling and spot checking system to help him on-line and immediately methods of complying with the coming CAA regulations.

Jet Fuel Pipeline

(McGraw-Hill World News)

Paris—The U. S. and French have agreed on plans for construction of a 400 mi. pipeline to carry jet fuel from the French Atlantic coast to within 40 mi. of the Franco-German border.

The pipeline will be operated by a French subsidiary company, Tupal, which will order the design and construction of the French Ministry of Industry and Commerce and with the cooperation of U. S. military authorities.

The U. S. will pay for pipeline construction costs and the French will pay for the pipeline and French and other North Atlantic Treaty Organization countries will pay a toll charge for use of fuel transported through the pipe that they use.

CAB Hits Safety Procedures

Civil Aeronautics Board criticism of Civil Aeronautics Administration's aviation safety procedure attacked the official report of a CAB investigation of an emergency crash landing made by a TWA 1049 Super Constellation at Follen River Air Station, N.Y., last Dec. 7.

The Board found that No. 3 and No. 4 engines (Weight R3750s) of the airplane failed due to failure of thrust cone gears of both engines. Although these had been a failure of the cone gears in the type certification test of the same model engine, it was certified without any further penalty tests because of evidence shown by the manufacturers of satisfactory use of all showed cases installed in other engines of different model.

■ **Modification—The** manufacturers now has a modification program to incorporate a long-piston drive instead of the present two-piston drive to lower the stress on individual gears. The Board asked that the CAA type certification was "following adequate post-testing of the failed cone gears."

At the controls of the plane was Capt. J. S. Kovacs, with 5,600 h. as a pilot, but only 94 h. in the new 1049 at the time of the accident. The Board complimented his excellent performance in putting the airplane on the runway at about

as he did, but found that emergency landing, although available, was not used, and that TWA had not trained the captain adequately in situations to this airplane from other model Constellations.

■ **Broken Off—The** criticism stemmed from the fact that the emergency landing system in difference on the 1049 than on earlier model Constellations. Similarly, hydraulic system was based on old with the fastening of propellers 1 and 4. Emergency procedure was available from an emergency system by using a backup valve valve from a normal to emergency setting.

This, however, was not used. In addition, a backup pump was used in an effort to get back pressure, and No. 1 and No. 2 propellers were reversed. The airplane swung left off the runway, the right wing was torn off and the plane stopped, rolling on nose wheel, but soon got off the ground in a modified "steep-gate" attitude.

Now, five weeks presented a possible fix, and most passengers climbed out of the main cabin door, while others left through the forward door by way of an evacuation chute. Work of the crew in handling the emergency so that no injuries resulted, was commended by the Board's report.

Chase Reported Sold To Kaiser Interests

New York and Washington sources last week said the Kaiser Motor Corp. was acquiring practice of Chase Aircraft Co. from Michael Stenbock of Trenton, N. J., founder of the company.

A Kaiser public relations man admitted that the transaction was under discussion, but insisted no agreement had been completed.

Previously involved in the Chase C-123B assault transport design and its manufacturing rights. The airplane was developed at the Chase-Trenton facility, but was being moved to his production at the Kaiser Willow Run plant, with at least one plane nearly completed there in 15 to 20 days, as assembly.

■ **Prior to Death—Amount** to be received by Stenbock for his controlling interest in the company has not been disclosed, but it is believed comparable to the first installment of \$2.5 million which was his price for 99% of the Chase stock to Kaiser in May 1951. At that time Stenbock retained 1% of the stock.

When the 1951 purchase was made, Stenbock became vice-president and chief engineer of the company, while Edgar Kaiser became president. Later, City Engineer, a Kaiser designer, succeeded Edgar Kaiser as president of the firm.

While the Air Force has ordered the Kaiser Willow Run C-123B aircraft, the company is reported still alive and several other manufacturers including the Chase-Trenton facility, have been seeking to have the plane orders transferred to their plants. Among other companies considered as contractors are Convair-F1, Wirth, Fairchild and Beech.

The original C-123B program called for 234 airplanes but was reduced to 100 by the Willow Run termination was in effect.

■ **AF Interest—Speculation** in Washington at that Kaiser is seeking to reacquire the Willow Run C-123B contract, with the argument that now the tooling and special equipment involved in production to any other plant would run up production costs enormously.

However, another Washington report is that the Kaiser management of the Stenbock off interests had been brought about by the merger of the Air Force, in order to facilitate contract transaction proceed steps.

New York sources say Stenbock plans to acquire another engineering company of his own, which was development contracts which Chase had and returning his Trenton staff and efforts. However, the Trenton facilities are now owned and might not be available to the new company.

Brazil Crash

- CAB says PAA jungle accident still a mystery.
- But engine is known to have fallen off in flight.

Mystery still surrounds one of the most tragic air disasters of the World War II era. A Pan American World Airways Boeing Stearman transport in the jungle of Brazil, a Civil Aeronautics Board incident in a wilderness report disclosed last week.

The Board attributed the crash to separation of No. 2 engine and propeller from the aircraft in flight because of "highly sustained forces followed by uncontrollable and divergent action of airframe for reasons undetermined."

The plane was flying at 14,500 ft.

► **Jungle Problem.** A 16-page summary of the accident in which 50 persons lost their lives, details the handling of investigating teams in the jungle, the inability to find the No. 2 engine and propeller which fell away from the principal wreckage, and the damage to the wreckage caused by the which reached many of the parts.

Analysis of the possible sequence of structural failure indicates that the emergency started in either the No. 2 propeller or engine. Shortly after, the left wing failed and portions of No. 2 nacelle. Almost simultaneously, and presumably as a result of violent pitching of the aircraft during the wing separation, the entire tail group broke from the fuselage at a point just aft of the dorsal fin.

► **Explosion Discarded.** The accident discounts the possibility of explosion as a factor, and the investigation showed no evidence of fatigue failure of the airframe structure. Other theories ruled out to include collision with foreign object malfunctioning of the engine system, engine loads from the propeller, structure weakened by fire in flight.

Possibility of fuel tank rupture or failure is discounted at considerable length in the report, connecting this accident to recent Boeing 777 accidents but pointing out significant differences in the Boeing accident.

"It appears probable that severe but brief set up by No. 2 nacelle after the engine separated from the engine was severe on the left wing rather than on the right and caused a partial failure of the left structure at about its mid span."

While the main portion was still flying on and sustaining up and down, it may have tilted the wing like a wing a wing to stop the elevator upward, causing a very high load on the horizontal tail and

been sufficient to cause a great increase in lift on the wing and upward failure of the left wing," the report says.

► **Propeller Discarded.** The report also discusses the fatigue failure possibility of the propeller blades on No. 2 engine. Examination of the mount for No. 2 engine, which remained with the aircraft, indicated that the separation resulted from forces greater than that for which it was designed. Other cause of engine loss from Boeing 777 airplanes in flight, in which the engine and propeller were recovered, indicated a blade failure and a destructive load reaching from propeller imbalance had caused the separation.

Nevertheless, the Board's report, in conjunction with some indication that the failure of a propeller blade may have started the chain of events which led to disintegration of the plane in flight.

Navy Buys 65-Knot, Twin-Engine Blimp

A 65-knot, twin-engine Navy blimp for detecting and tracking submarines is under construction at Goodyear Aircraft Corp., Akron, Ohio.

Known as the ZP-4K, the new-type blimp is a streamlined version of the experimental design "K" type blimp.



FORRESTAL TAKES SHAPE

Contractible project has been made in construction of the Navy's largest ship, the USS Forrestal (CVN 59), which is being built at Newport News, Va. Steel to go on more than 70,000 tons fully loaded, the Forrestal is designed to handle new Navy military equipment such as the Douglas A-10A. The ship will feature deck slots and have a retractable bridge. It will be more than 1,000 ft long.

used for submarine warfare during World War II. The blimp is powered by two Pratt & Whitney R1140 radial engines mounted on catapault, and two Hamilton Standard 110 ft. diameter blade reversible pitch propellers. ZP-4K can have practically instantaneous or maintain low speeds to track both surface and subsurface craft.

Test flights will be conducted at Goodyear's Wright-Patterson base. The ZP-4K's envelope is made of aluminum-coated cotton and has a capacity of 575,000 cubic feet of helium gas. Original K-type ships carried 450,000 cubic feet of gas. During World War II, 110 ft. type were built.

Flight officers and crew will wear each of the enlarged blimps. The crew sits on a single fully retractable, swivel wheel. Four stabilizers and control surfaces on the ship's stern are mounted in conventional V-shape configurations.

Tri-Motor Gyro

A gyroscopic instrument used by Fieseler Air Lines in 1939 as the world's first regularly scheduled military mail service has been converted at Camden, N. J., into a tri-motor flying boat for investigating flight of a specially loaded rotor system.

Navy has awarded a contract to Kellett Aircraft Corp. to provide reliable data on the performance characteristics of a suspended helicopter-type rotor system.

Converted for Navy use, the universal vertical plane uses three gyroscopic rotors and one Conventional-type rotor with a tri-motor and a stabilizing. The modern trial of the old model requires no change.

Weapons Study Completed

McGraw-Hill Publishing Co. announces it has completed a contract with the Air Research & Development Command of the U. S. Air Force for a study project.

An official summary sent to publishing company executives by AIDC headquarters expressed "appreciation of the research for the very valuable job done. We feel that the effort and cooperation of McGraw-Hill Publishing Co. has been of great mutual benefit to our respective organizations and we have great admiration and confidence in the people who were assigned to this project."

Walter Knapp, formerly national managing editor of Aviation Week was executive editor of the study project. He will now become week magazine as manager of the Great Lakes news bureau in Detroit, according to New York Times. Several other staff members of the weapons project have been employed by McGraw-Hill magazines.

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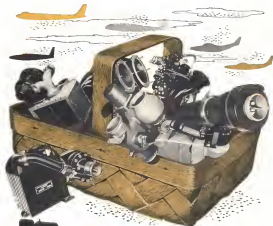


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Crash Barriers

- USAF tests Navy device on land-based jet fighters.
- Barricades save 180 carrier planes a year.

Since Air Force test approval, Navy has solved its shipping land landing jets at combat air fields last September. Navy has supplied the Air Force with 600 crash barrier webbing assemblies. Air Force is testing crash barriers at Keesler airfield (Aviation Week July 13, p. 21) to determine if the Navy's answer to successful carrier landings can be applied to land-based aircraft.

Indications are that the barrier idea may be the answer to Air Force's problem. Navy has asked USAF to evaluate what its barrier needs will be for 1954. Air Force builds its own structures, Navy supplies the barrier webbing, hardware, monitoring devices and chain. Fast Used is F9F-4's dual difference between carrier and ground barriers is the anchor chain attached to the impact cable. When the cable is struck by the landing aircraft, the chain is engaged and the plane is slowed as it drops the heavy chain along the runway. This idea was first used at the Naval Air Test Center, Patuxent River, Md., in September 1946.

The anchor chain emergency shackle is now installed on all major Naval air stations until more portable inexpensive equipment is available.

Photographs at right just released by Navy show F9F-4's barrier landing on the USS Bonhomme with crash barrier extended. Nylon barriers were developed in 1946 when triplex landing gear first came into prominence. First successful barrier was produced in September 1947 and evolved as the USS Bonhomme. Since then barrier installations have been made in all aircraft carriers operating triplex type aircraft. Navy estimates it uses 100 yards a year by use of at least crash barriers on carriers. Most recent type of aircraft carrier employed aboard a carrier is the Bonhomme, a 12 ft high nylon webbing installed in front of the deck parking area. A plane not stopped by the arresting cable or another net but not placed into the barrier.

► **5,000 Landings**—In the carrier deck context, such as the USS Bonhomme, the problem of aircraft coming rate parked planes is eliminated since the landing pattern is on the carrier portion of the deck, landing away from the parking area on the forward deck.

More than 5,000 landings have been made on the Bonhomme's carrier deck since it was converted.



F9F-2

Crash barrier jet fighter, two landing, goes over crash catching cable on deck of USS Bonhomme. D. Research and tests for more crash barriers.



CONTACT

with first of three nylon barriers is made by Bonhomme's main gun, but no slowing of jet's run is yet evident. New look at test photo, below.



HALTED

By all three barriers clatching at triplex landing gear, F9F's red barbs into air. Shoulder harness protects pilot from effects of sudden stop.

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TRANSFORMERS

North Sweden Gets Helicopter Service

Helicopter service in the wilderness of north Sweden is assured with government approval of Orlund's Aviohelikopter being proposed to serve Stockholm-Östersund routes.

Orlund will buy three Sikorsky HO4S to fly its new route since the Swedish aviation manufacturer, Svenska Aeroplan AB (Stock), has no plans for buying helicopters at this time.

In a part of Sweden where dense forests preclude regular air service, the air line plans to use helicopters for ambulance and rescue work as well as for air surveying and reconnaissance and some agricultural dusting and spraying. The firm also expects to introduce airtaxi service and to carry out special military assignments.

A State Department report, referred by Transportation, Communications and Utilities Division of Commerce Department, comments: "The service... holds great promise with its wide range of useful applications."

Viscounts Worry PAA

Pan American World Airways is concerned over competition from British European Airways, now helicopter service on the London-Copenhagen-Stockholm route.

BEA is flying Viscount Viscounts on the route on overnight day lines at tourist rates. Pan American provides twice-weekly DC-4 service and is the only major airline now flying into Scandinavia with its seasonal service.

With Viscounts, BEA has cut the travel time between London and Copenhagen to 2 1/2 hr., 45 min. Pan American makes the trip in 5 hr., 20 min.

PAL Gets Approval To Fly Over Burma

Philippine Air Lines has been added to the list of carriers authorized to fly over Burmese territory at night, U.S. Department of Commerce reports.

Under regulations set up by the Civil Aviation Authority, Ministry of Transport and Communications of the Union of Burma, only authorized airlines may fly over Burmese territory at night. Unathorized planes will be shot down, the ministry explains.

In flying over Burma at night each authorized line is to Pan American World Airways, KLM, BOAC, Swedish Aeroplan Airlines System, Air France, TWA, and Indian National Airways must fly at 5,000 ft. or above within the 25 mi. corridor established by the ministry on the Calcutta-Rangoon and Rangoon-Bangkok routes.

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GULF dependability...proved by experience



FIRST Sabena S-55 for delivery at Antwerp dock prior to opening passenger service.

Sabena Starts S-55 Operations

Brussels-Sabena put its first new Sikorsky S-55 helicopter in scheduled non-European service Aug. 1, flying from the city to Antwerp and Rotterdam. During the first month the carrier will limit its services to carrying mail and cargo; passengers will be carried beginning next month, thus making Sabena the first operator to offer scheduled international cargo service for passengers.

Helicopters have already been completed in the heart of Brussels, Lege, Lille, Rotterdam and Cologne. A landing area is ready for use at Antwerp Airport, two miles outside that city.

Three Helicopters—The carrier expects to have three S-55s in service by the end of this year. They will carry seven passengers each and will cover the following routes: Brussels-Antwerp-Rotterdam, 70 mi., twice daily; Brussels-Paris-Luxembourg-Sarcelles, 155 mi., Brussels-Lille, 90 mi., twice daily; Brussels-Luxembourg-Sarcelles, 150 mi., twice daily. These remote stops will be made at Brussels' Melsbroek Airport for transfer of passengers to and from seaplanes. Monthly, the three S-55s will have to cover more than 450 mi. of scheduled helicopter service daily.

Passenger Service—The carrier expects to have three S-55s in service by the end of this year. They will carry seven passengers each and will cover the following routes: Brussels-Antwerp-Rotterdam, 70 mi., twice daily; Brussels-Paris-Luxembourg-Sarcelles, 155 mi., Brussels-Lille, 90 mi., twice daily; Brussels-Luxembourg-Sarcelles, 150 mi., twice daily. These remote stops will be made at Brussels' Melsbroek Airport for transfer of passengers to and from seaplanes. Monthly, the three S-55s will have to cover more than 450 mi. of scheduled helicopter service daily.

Comparative railway fares to Rotterdam from Antwerp are \$4.50 (second class) and \$2.75 (third class).

Although Sabena reportedly may suffer some loss on its helicopter operation,

nonetheless, this service is expected to increase the load factors on its fixed-wing services. Sabena helicopters made its northern France, Luxembourg, the Saar and North Holland, its own distinct from several airports. The helicopter is expected to speed to these points in a matter of quickly getting to Brussels where they can connect with major European landlines and trans-Atlantic carriers.

CAL Streamlines Ground Organization

Recent consolidation of maintenance, engineering and operations divisions by Continental Air Lines has resulted in speeding decisions and improving employee morale, the carrier reports.

In the reorganization, C. A. (Ed) Hunter, CAL vice president operations, has been given control of maintenance and engineering. Don Wilson was named his assistant, and Wayne Lyden was promoted to a new position of engineering and maintenance. Formerly the carrier also had a vice president maintenance and engineering, but this post was vacated by a resignation.

In his new multi-purpose job, Hunter has the sole responsibility to decide whether a plane is given to maintenance or pilot training personnel. He feels that the new setup has facilitated the carrier's advance planning for maintenance and pilot training prior to putting its new Constellation in service.

Wilson reports that flight personnel feel that their ideas on maintenance will receive effective consideration under the new setup. This attitude is shared by maintenance employees as regards operations suggestions, Lyden states.

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RAAF Flies Obsolete Aircraft

Delays cripple Australian production of Sabres and Canberra; experts want U. S. to set up assembly lines.

By Murel Goshawk
(McGraw-Hill World News)

Melbourne—Australian federal government is far from satisfied of its emphasis on the ability of local aircraft industry to produce modern war planes quickly, efficiently and in volume.

This will be the first result of a failure to produce a modified version of Sabre jet fighters and Canberra

medium bombers on schedule.

► **Obsolete RAAF:** The first locally built Canberra has been delivered to Royal Australian Air Force and the first Sabre—equipped with a British-made engine—has yet to take off from the newly built Lines jet aircraft near Melbourne. Mass production of these planes is in the distant future, and it is not certain that the planes will be up to date when they begin rolling off assembly lines. Even the trainer planes

are not leaving off the assembly lines as quickly as they should be, and it is the maximum. Royal Australian Air Force with its first-class staff of flying and ground personnel—most rely on obsolete planes of limited flying efficiency. Hopes for getting large numbers of U. S. and British planes will be without foundation.

► **Industry Attitude:** Five are conservative opinions held by the three major aircraft producers in Australia.

► **De Havilland Aircraft Pty.** plants in Sydney appear not to have been fully organized that large-scale production of war planes is either necessary or desirable.

► **Commonwealth Aircraft Corp.** of Melbourne is not moving the required degree of Government support.

► **Government Aircraft Factories** are somewhat critical of their position and would like to secure for themselves a big share of the market as possible.

The free-enterprise government of R. G. Menzies, while decentralizing many fields of industry, seems to have forgotten its aircraft production plants. No one knows, or is likely to know, whether they are operating with full possible efficiency or to what extent the taxpayer is subsidizing the domestic aircraft industry.

► **Growing Mergers:** All this is very easy to explain, because there are good facilities in Australia for helping the United States and its allies at a time when supplies of modern warplanes are vitally needed.

Australian engineers have acquired an excellent world-wide reputation. Shortage of equipment, which at one time was crippling Australian industrial effort, has been replaced by mild unemployment sufficient to furnish the aircraft industry with most of the required workers.

► **U. S. Industry Needs:** A decision now to discontinue with Australian war planes would be impractical and too costly to merit consideration. But even more enlightening Australian experts are of the opinion that the general level of aircraft production efficiency, could and should be increased quickly. There also believe some private initiative should be allowed—possibly to include re-equipping U. S. firms, which in the past were removed to be interpreted in establishing new increasing business here.

Such an industry set only could supply planes and spares for the Australian and New Zealand air forces but also could engage in export as exports to South American countries, many of which shortly would come to the market for war planes.

The possibilities and opportunities are there but further action depends on the Australian federal government.

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AMERICAN AIRLINES CONTRIBUTIONS TO THE DEVELOPMENT OF AIR TRANSPORTATION



The DC-3—the Plane that put the Airlines "in the Black"

American Airlines celebrated its tenth anniversary in 1936 by introducing a completely new aircraft in the world—the Douglas DC-3. It had been built by a group of Douglas engineers under the supervision of William Littlewood, American's chief engineer.

Douglas was then searching for a

dependable market for aircraft. American wanted a plane that would carry more people with greater safety to put the airline on a sound paying basis. The DC-3 was a triumph on all counts. It finally put the airlines "in the black."

For more than a decade, in peace and war, the famed dependability of the DC-3 proved it an affectionate

friend to "Queen of Transporters." When, in 1949, the last of the DC-3s flew, they gave way to newer, faster planes on American's routes, the DC-3 had earned an immortal niche in history.

The development and inauguration of the Douglas DC-3 is only one of many milestones in the history of air transportation that have been introduced by American Airlines.



AMERICAN AIRLINES INC.

American Landing Airline

the cathode-sputtering accomplished by solvent treating. Considerable difficulty is usually encountered when the tool strike area where there is cathode sputtering.

One person reports improved operations can be obtained by using clamped-on cathode tips operating at a cutting speed of 350,000 fpm with 0.07-in. feed at 100-in. depth of cut.

• **WHAT** is the effect of gas use on weldability of high-temperature alloys?

Information indicates that little if any data are available. Most high-temperature alloys are machined either in the solution treated or solution treated and aged condition, since engineering properties depend first on solution treatment. When surface finish is considered, fine grain steels usually machine as much as a micron is to give improved finish.

• **WHAT** cutting tool angles are recommended for interrupted cuts on jet engine alloys?

Negative rake angle combined with positive flank rake is beneficial, since the major problem is support, but chip welding is also encountered. The negative rake angle adds resistance to support resistance, while the positive back rake decreases cutting pressure.

Hot Machining

• **WHAT** progress has been made in the hot machining of high-temperature alloys?

Little, if any, work has been done. Major problems involved consist of the effect of heat on the behavior of parts and on the surface finish (tooling) produced.

• **WHAT** about hot machining of S416 and steel alloys?

Some preliminary work has been made where the parts were heat-treated. No appreciable increase in tool life over that obtained at room temperature was found.

• **ARE** cutting forces reduced in hot machining?

Tests indicate that cutting forces for machining S416, A286 and IN-286 did not increase appreciably when the parts were heated. Very small decreases in cutting forces were noted, but the net result did not indicate the effect expected was justified.

Warpage

• **HOW** may warpage in this condition be eliminated?

In some cases it has proven when stress is added externally on the side opposite the thin section. This has helped, but will not necessarily remove the difficulty. It is extremely important that parts being machined be built up rapidly. Most new jobs require that one particular section such as each has its special problems.

• **HOW** is distortion prevented in air chonding thin specimens whetted?

Distortion minimized may be caused by either heat treatment at heat

which is generated in the machining operation, or by heat-treating in solution. Satisfactory results have been obtained in many cases by purchasing material in the wrought condition. The parts are then rough-machined and solution treated. Following the solution cycle, the parts are finish-machined and then stress-relieved.

It is important to consider the thickness of parts which cutting up heat treating cycles, since thick parts require longer heating time than thin sections.

Stainless Work

• **WHAT** progress has been made in the cutting of stainless steel?

Proper operation instructions are essential. Selection of cutting fluids for this type of machining is of primary importance.

Carbonaceous oils being used by most people for machining stainless steel. Inert-type cutting fluids with emulsifier it is used to the greatest extent and are giving the best results. Grades of cutting oils are numerous and are the straight hydrogen fluoride compositions, such as Kometrol K & K, and Coroblen 15A.

Some are 5-6 deg. steel rule and 1-8 deg. solid rule. Others are 0 deg. steel combined with 6 deg. solid rule. It has been found that considerable chipping may occur with high positive rake and wear is the major problem with high negative rake.

Chip welding to the cutting edge has proven to be a major problem. As they are knocked off in cutting, they tend to chip off the outside tip, too. Chip welding is not as bad in slant cutting as in conventional cutting, because, in the latter, the work is clench cutting, the chip thickness approaches zero. If chip loads in the neighborhood of .001 to .002 in. are used, there may be some tendency to excessive wear, since a major portion of the cutting is being done in a work hardened area.

Interrupted cuts on lathe, boring mills and similar types of equipment often have given difficulty when inside tools are used, since chipping occurs in one case, cut after each opening in the neighborhood of 140 fpm with a feed of .001 in. have proven satisfactory when using inert-type cutting fluids.

In general, feeds of .005 to .008 in. are best used for turning operations.

• **WHAT** can be done to improve the machining of stainless steel?

Proper drill grinding is the most important consideration. This includes grinding of the point angles, clearance angles and proper web thickness. Next, here and there there probably cannot be too often drilled should be drilled. Third, a variety of opera-

ting conditions, material and parts should be made to determine correct cutting fluid and to apply that cutting fluid correctly.

• **WHAT** is the effect of decarburization on finished parts?

The strength of each part is impaired, because the decarburized layer is severely weakened.

• **HOW** may decarburization be prevented?

One successful method reported involves application of a thin copper film prior to heat treatment. Following the heat-treating cycle, the copper film is stripped off. If the steel is kept extremely dry, no difficulty is encountered from hydrogen embrittlement. Nevertheless, information indicates it is preferable to bake parts after plating to drive off hydrogen, thereby preventing the cracks hydrogen might cause.

Smart Forming is now available with controls which maintain a carburizing atmosphere. In all cases where such atmospheres are used it is essential to set up to check feed paths and valve samples, since such particular damage has its own penetration. When such tests are made, it is extremely important to record the data for future reference.

Wax Use

• **WHAT** are the results achieved in using wax for drawing, drilling and tapping operations?

Wax pellets are at present being inserted in holes drilled prior to tapping. Results have been satisfactory, but some rigidity is made in the time involved in inserting the pellets. In some applications it has proved satisfactory to coat the tap with wax rather than fill the hole.

• **WHAT** troubles have been encountered in removing wax?

In many cases the wax is left in the part, where it provides a somewhat protective coating. When it is necessary to remove the wax, drawing in a degreaser has been satisfactory.

• **How** is wax used?

Wax is used in the form of pellets, which are inserted in the hole.

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Big 'Bathtub' Primes Plane Alloys

A new chemical bath for reforming components, reported to be the largest bath ever built in the industry, is giving interrupted production advantages to Douglas Aircraft Corp., Long Beach, Calif.

The new chemical bath is a stainless steel tank, 12 ft. long, 12 ft. wide, and 12 ft. deep. The new tank provides for hot acid cleaning, and rich in preparation for cutting, grinding, chemical bath for treating. Aided aluminum parts to be painted, spray (zinc) and drying.

Special demineralization apparatus for water used in process 15,000 gal daily.

Lockheed is installing a 4-ton overhead crane, which will be able to lift two 15-ft. barrels of aluminum alloy parts at once.

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Forty-Sevens in Final

Group of Lockheed Boeing B-47s are now completing on this final flight assembly line at the Mercury, Ga., plant. Unusual features of B-47 structural layout shown here include the seven down wing and along the top of the fuselage, the centerline component of two GF-147 bodies.

parts in the inboard pair, and the large number of small separate parts making up the wing leading edge. Numerous subassemblies for leading gear, hydrolytic bomb bay and seven down probably account for the distinctive four-row nose configuration to suggest construction of heavy hydrogen, thick skin.

PRODUCTION BRIEFING

• **Masterman Precision Bearings, Inc.**, Koon, N. H., plans to set up a West Coast manufacturing branch to provide quicker service in that area. Initially the new factory will be provisioned by the home plant and supply bearings to customer specifications. Later it may be used to supplement the company's East Coast production.

• **Fusile Airmotion Corp.**, Hartford, Conn., has signed an agreement to become exclusive U.S. distributor for air-curtain equipment of **Sir George Gairdner & Partners, Ltd.**, England, and its subsidiary, **Gairdner Engineering Co., Ltd.**, of Canada. FAC will handle Gairdner's turbo refrigeration equipment, cabin superchargers, fans, water separators, silencers and associated air conditioning

• Reynolds Metals Co. has abandoned plans to build a \$65,000 sq. ft. addition to its extensive plant at Phoenix, Ariz., which was to house a Navy 12,000-ton and an 8,000-ton vessel.

■ **Siliconix Aerospace, Inc.**, Eatontown, N. Y., is expanding its electronics engineering department to include a communications development project under the direction of Donald S. Kellogg, formerly chief engineer of W. L. Mazon, New York. The company recently dedicated the first of five new plant units at Virginia, Va., for producing aircraft systems.

► Boeing Airplane Co. reports employment at its Seattle, Wash., plant reached a high of 33,900 in June.

► **Reid Engineering Corp.**, Los Angeles, and its subsidiary, Guided Migration, Inc., are building a 21,000-sq-ft plant in Glendale, Calif.

*Universal Metal Products, Inc., Allentown, Pa., has been named exclusive licensee for the Multiple Line fastening clamp developed by Northern Aircraft, Inc., for joining together two or more lines or cables. The clamp was originally designed by the F-85 Scout team.

• Aeroquip Corp., Jackson, Mich., has acquired the 45,000-sq.-ft. plant at Sterling Electric Motors, Inc., at Van Wert, Ohio, to provide additional up-coming facilities and storage space. Aeroquip is transferring its operations at Chubbuck, Mich., to the Van Wert facility.

Teleconex Laboratory, Inc., Westbury, L. I., N. Y., has completed a new engineering building adjacent to its Kismet St. plant.



FARMET virtual takeover shows world's first act for first at Wisconsin's annual event

British Missile Work Expands

Increasing British participation in metals programs is seen in the growing number of firms using the Goodall Weapons Range at Woomera, Australia. More than 100 British companies—including aviation, engineering, chemical, atomic, explosives and plastic manufacturers—are working at Woomera.

Some recent novels include:

- **Funny Aviation Co.** has sent technicians to Woomers to test their model vertical takeoff piston rocket powered experimental aircraft (AVIATION WEEK, June 1, 1953, p. 9) and more tests are in the works.

• **Englek Electric Co.**, which is opening workshops in Salisbury, South Australia, for assembly of guided missiles to be tested at Woomera. The managers of the firm's Weapons Division intended to set up the new facility. This company has contracts to build a number of missiles and has already fired a prototype rocket at the Aberporth range on Britain's west coast.

• **Boeing Aerospace Co.** is beginning a depot at Salisbury to support its work

on the Australian stage. This has already has tested several research and get test vehicles as part of its routine program.

- **Acme** of **Whitworth**, a member of the **Big Hanks** **Sellers** **association** **last** **year**, **announced** **last** **year** **ago** **that** **it** **is** **putting** **up** **its** **own** **test** **base** **at** **Sellers**. **The** **company** **plans** **to** **purchase** **several** **and** **run** **them** **too**.
- **General** **Electric** **Co.** **is** **creating** **a** **facility** **for** **developing** **mini** **equip** **now**.

► **Windtunnel**—A windtunnel facility capable of producing 1,900-mph winds is under construction at the Australian wind center. It is thought to be the only one of its type in the Southern Hemisphere.

The tunnel will be used to study such phenomena as shock waves in connection with long-range high-speed winds. Photographic exposures of one-fourth of a second are planned in the test program.

Cost of the setup is estimated at \$150,000.

DURANICKEL

may easily provide the
spring properties
you need in a
corrosion-resisting alloy

You might look a long time before finding another alloy with all the advantages of Duranickel.

A wrought alloy, Duranickel is age-hardenable, or capable of having its hardness and strength increased by thermal treatment—and has the desirable corrosion resistance of Nickel.

And that's only the beginning! You can figure for yourself just how valuable Deromachol could be for a spring application of yours when you consider its other excellent characteristics.

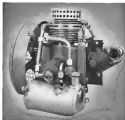
- uniform spring properties at temperatures up to 500°F
- high fatigue strength and endurance limit for nonferrous, corrosion-resisting materials
- made washable

As a typical example of Damnick's usefulness, let's examine briefly the new Kidde 4-stage compressor shown above:

Developed for pneumatically-operated airborne equipment, this lightweight compressor has neither connecting rods, wrist pins nor other complications required by conventional designs. Instead, a crankshaft-rod can simply push the pistons into their cylinders. A scotch yoke and sliding rod reverse the first piston, while compressed air from a second stage retracts the others.

For the shut valve in the first stage which is intricately shaped and then heat treated, the design engineers of Walker Kiddle & Company, Inc., specified age-hardenable Duranickel. They also called for Duranickel for valve seat springs.

Mechanical Property Ranges of Diamanoid				
Area and Condition	Tensile Strength 1000 psi	Flex Strength 1000 psi	Hardness Janka lb./in. ²	Modulus 10 ⁶ psi
Isolated Tree				
Raw/Unkilled	101-120	100-80	90-105	1.0-1.2
Raw/Killed	100-120	115-145	110-130	1.0-1.2
Polished/Unkilled	100-120	100-80	80-100	0.8-1.0
Polished/Killed	100-120	110-130	100-120	0.8-1.0
String				
1. Round	100-120		100-120	1.0-1.2
2. Round, epoxidized	120-130		110-130	1.0-1.2
3. Round, epoxidized	100-120		100-120	1.0-1.2
4. Round, epoxidized	100-120		100-120	1.0-1.2
5. Round, epoxidized	100-120		100-120	1.0-1.2
6. Round, epoxidized	100-120		100-120	1.0-1.2
7. Round, epoxidized	100-120		100-120	1.0-1.2
8. Round, epoxidized	100-120		100-120	1.0-1.2
9. Round, epoxidized	100-120		100-120	1.0-1.2
10. Round, epoxidized	100-120		100-120	1.0-1.2
11. Round, epoxidized	100-120		100-120	1.0-1.2
12. Round, epoxidized	100-120		100-120	1.0-1.2
13. Round, epoxidized	100-120		100-120	1.0-1.2
14. Round, epoxidized	100-120		100-120	1.0-1.2
15. Round, epoxidized	100-120		100-120	1.0-1.2
16. Round, epoxidized	100-120		100-120	1.0-1.2
17. Round, epoxidized	100-120		100-120	1.0-1.2
18. Round, epoxidized	100-120		100-120	1.0-1.2
19. Round, epoxidized	100-120		100-120	1.0-1.2
20. Round, epoxidized	100-120		100-120	1.0-1.2
21. Round, epoxidized	100-120		100-120	1.0-1.2
22. Round, epoxidized	100-120		100-120	1.0-1.2
23. Round, epoxidized	100-120		100-120	1.0-1.2
24. Round, epoxidized	100-120		100-120	1.0-1.2
25. Round, epoxidized	100-120		100-120	1.0-1.2
26. Round, epoxidized	100-120		100-120	1.0-1.2
27. Round, epoxidized	100-120		100-120	1.0-1.2
28. Round, epoxidized	100-120		100-120	1.0-1.2
29. Round, epoxidized	100-120		100-120	1.0-1.2
30. Round, epoxidized	100-120		100-120	1.0-1.2
31. Round, epoxidized	100-120		100-120	1.0-1.2
32. Round, epoxidized	100-120		100-120	1.0-1.2
33. Round, epoxidized	100-120		100-120	1.0-1.2
34. Round, epoxidized	100-120		100-120	1.0-1.2
35. Round, epoxidized	100-120		100-120	1.0-1.2
36. Round, epoxidized	100-120		100-120	1.0-1.2
37. Round, epoxidized	100-120		100-120	1.0-1.2
38. Round, epoxidized	100-120		100-120	1.0-1.2
39. Round, epoxidized	100-120		100-120	1.0-1.2
40. Round, epoxidized	100-120		100-120	1.0-1.2
41. Round, epoxidized	100-120		100-120	1.0-1.2
42. Round, epoxidized	100-120		100-120	1.0-1.2
43. Round, epoxidized	100-120		100-120	1.0-1.2
44. Round, epoxidized	100-120		100-120	1.0-1.2
45. Round, epoxidized	100-120		100-120	1.0-1.2
46. Round, epoxidized	100-120		100-120	1.0-1.2
47. Round, epoxidized	100-120		100-120	1.0-1.2
48. Round, epoxidized	100-120		100-120	1.0-1.2
49. Round, epoxidized	100-120		100-120	1.0-1.2
50. Round, epoxidized	100-120		100-120	1.0-1.2
51. Round, epoxidized	100-120		100-120	1.0-1.2
52. Round, epoxidized	100-120		100-120	1.0-1.2
53. Round, epoxidized	100-120		100-120	1.0-1.2
54. Round, epoxidized	100-120		100-120	1.0-1.2
55. Round, epoxidized	100-120		100-120	1.0-1.2
56. Round, epoxidized	100-120		100-120	1.0-1.2



NW COMPRESSOR delivers volume at high altitudes. At 35,000 feet, this Airtec-Airtec air compressor delivers 175 cu in. (at 100 psi) per min. at 100 psi compared to 2,050 cu in. (at sea level) delivery of 1 cu in. of free air compressed to 100 psi can be maintained at high altitudes when inert air is pressurized. The compressor weighs only 52 pounds, has foot-candle value of 100,000 and 100,000 air flow in ft/min. in case of emergency. (See advertisement for details.)

Duralcan is well able to withstand the high temperatures encountered in meeting the severe requirement. It is not affected by moisture squeezed out of the air during compression. And it offers high strength to prevent warpage.

Put Duranickel down in your book for workability, too. It can be hot-worked, forged and cold-worked.

It is most readily machined in the annealed condition, and is commercially machineable in other conditions at hardnesses up to 275 HBW.

Duracluck can be joined by commonly-used welding, brazing and soft soldering processes.

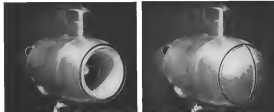
You'll find detailed engineering data on Duranickel (and its composition alloys, Duranickel "R" and Permalloy®) in Technical Bulletin T-32 "Engineering Properties of Duranickel." A copy is ready and waiting for you. Write us for it.

Macrolite, keep Duralite in mind for any applications where corrosion resistance, high heat and great strength are needed in high stress applications. Consult your Distributor of Inco Nickel Alloys for the latest information on availability from warehouse and stock. Remember, too — it always helps to anticipate your requirements well in advance. The International Nickel Company, Inc., 67 Wall Street, New York 5, N. Y.



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THURSDAY : 10:00 AM - 12:00 PM THURSDAY : 12:00 PM - 1:00 PM
FRIDAY : 10:00 AM - 12:00 PM FRIDAY : 12:00 PM - 1:00 PM
SATURDAY : 10:00 AM - 12:00 PM SATURDAY : 12:00 PM - 1:00 PM
SUNDAY : 10:00 AM - 12:00 PM SUNDAY : 12:00 PM - 1:00 PM



EL AL'S AUXILIARY JET shows its "cyclical" flight to keep temperature and fuel from scorching and keep hot engine cool.

Jet Units May Raise C-46 Profitability

- El Al expects twin Marbore 2s to raise weight limit of its five Commandos to 54,000 lb., boosting payload.
- Auxiliary engines also should improve takeoff safety; carrier will make installation available to others.

By George L. Christian

El Al Israeli Airlines expects to boost both the island safety and payload of its five C-46s by installation of an auxiliary turbojet powerplant on the belly of the planes (AVIATION WEEK July 27, p. 16).

The engine-Turbomeca Marbore 2 turbos—will enable operators to boost C-46 takeoff weight by about 10,000 lb. to the craft's maximum structural weight of 54,000 lb., El Al officials believe. This will free them the Commandos from a constant maintenance and repair cycle.

- **Advantages**—Among the benefits the auxiliary powerplant can provide:
 - Sales takeoff with heavy loads from hot or high fields, especially in case of main engine failure.
 - Shorter takeoff runs.
 - Better rates of climb.
 - Higher possible cruise speeds.
 - Greater power in case of severe icing conditions.

The Marbore will be mounted side by side under the belly crop compartment in individual streamlined pods. In previous installations, a different arrangement was used. Using the Baseline airline, mounted in two pods well outboard of the engine nacelles. Flying

Tiger and a single unit along under the belly.

The only penalties imposed by the jet power boosters are a speed reduction of approximately 2 mph and a weight penalty of 515 lb. per pod, El Al says. ► **Twin in France**—The prototype jet power boost was recently shipped from El Al's engine building shop, near New York, International Airport, where it was assembled, to Turbomeca's plant in Bordeaux, France. There it will undergo wind-tunnel tests to check on long characteristics and other phenomena. The Turbomecas test should take 1 to 3 weeks, after which the unit will be sent to Israel to be installed on a C-46 and run through a series of flight tests.

► **Outside Market**—Currently, El Al is marketing 100 power pods for its fleet of five aircraft. El Al says more than 100 units are in effect in current calculations, but El Al officials say they will make the installation available to civilian and military operators also.

The pods will be completely interchangeable and will be adaptable to almost any type of plane. Rough price estimate of one pod, complete and ready to install is \$75,000.

El Al says that Elbogen Airlines has already ordered several of the auxiliary units. Adds Avihu to 5,600 lb. high-

► **Why the Marbore**—El Al says these engines for selecting the Marbore 2 simplicity of design, excellent performance characteristics, and long overhaul period—about 600 hr. Marbore 2 statistics dry weight—280 lb., specific fuel consumption—170 gph at takeoff power, 137 gph at maximum power and static thrust—510 lb.

Continental Aviation & Engineering Corp., which builds the Marbore under license from the French firm, Société Turbomeca, has gotten more than 1,000 lb. thrust out of the Marbore 2, company officials have told AVIATION WEEK.

An afterburner is available which will increase the engine's thrust to 1,375 lb.

► **Design Features**—The engine pod and installation design of the El Al unit was done by Kirch, Schlotter, aerodynamic mechanical design and development consultant. Schlotter claims considerable experience. The flow for hot air later became chief engineer of Deutsche Luftfahrt, the German airline, he was at one time chief engineer of Fokker Aircraft Corp., and later, design and development engineer for Republic Aviation Corp.

In designing the El Al installation, Schlotter and his associates aimed at simplicity, ease of maintenance and inspection, interchangeability and mass production. They appear to have succeeded.

The pod's cooling is made up of large pipes, to make the jet engine as accessible as possible. Avihu believes



HERE'S HOW El Al's C-46s will look when auxiliary twin jet pods are added.

facilitate quick removal and installation. Two levers on either side of the aftercooling case to draw in air to cool the turbine.

► **Structural Details**—The pod is held to the C-46 wing through a sturdy aluminum engine support that is attached by drilling out existing rivets from the plane's wing and replacing them with bolts. The supports may be installed through existing access doors, thus eliminating the cutting of access panels.

The support and the upper part of the Marbore's housing are permanently attached to the aircraft. The jet engine, with its pod and the lower part of the streamlined housing or pylon, is joined to the support with two air pressure joints and a tie rod. Three electrical connectors and three fluid connectors (fuel, oil, and oil and CO₂ fire extinguisher) complete the installation. Schlotter says with this arrangement, engine change time is less than 10 min.

Engines were mounted near the center of gravity of the aircraft and close to its structure to eliminate any yaw or other effects.

► **Exhaust and Interlocks**—Exhaust is electrically operated "valves" are mounted at the pod's air intake. They remain closed whenever the jet is in operation to prevent air from rushing in and to keep air flowing smoothly.

An electrical interlock is used to:

- Prevent engine from being started when engine is closed.
- Prevent engine from being started when engine is operating.

Exhaust valves 24 in. diameter to open in 10 sec and are stepped in the extreme positions by Microswitch. They are supplied by 24 (oil) kg valves and interlock. This actuator was used because it was immediately available and cost was low.

The engine is provided with deceleration lines (in to the port-deck engine) mounted around their periphery. El Al is studying possibility of using Goodrich heated rubber door boots.

Schlotter has an interesting theory on

oil combustion in the case of his pod. The jet engine's air intake duct system also in oil tank and oil cooler. The auxiliary component has a filter neck at one side.

Total capacity is about 51.5 gph, of which 14 in. is oil, the rest for fuel.

► **Engine Controls**—The jet engine is started electrically by pushing a button on the cockpit. Starting time is about 20 sec. A new turbine temperature control automatically reduces fuel flow to the engine if turbine temperatures become excessive. Normal operating temperature is 1,200 F.

Several controls include two fuel shutoff devices, electrical and manual, a fire extinguishing device, which is independent of the engine's system, and fuel pressure and engine controls.

► **How Project Started**—Schlotter says the impetus to develop and design the pod as a result of an investigation by El Al's deputy managing director, Tedi Pado who was interested in the best way to increase the C-46's payload and make the aircraft safe in case of engine failure at takeoff.

Starting last January, Schlotter had the test completed in June. Much of the initial work was subcontracted to show Long Island firm, Aero Techno in Memphis, Schneider Heibel in Geneva, City and Lubliner in Long Island City.

Schlotter also developed a stand that allows the jet engine to be wheeled under the aircraft, attached and the stand removed without having to touch one of the pod's cooling lines. Stand was used to move the engine in and out of the pod.

Stratocruiser Engine Conversion Pays Off

Northwest Airlines says it has made the B-488 engine conversion program off converted powerplant reliability, NWPA reports.

In June 1952 the airline began converting Model B-3 engines to its B-488s in the B-6 version, with heavier power section, stronger turbo-

comparing and low-tension ignition system. All the conversions have been made and, with the first of the B-6s in operation, a little more than a year, NWPA reports more than 100 of the B-6s are in service.

Several months will be required for a complete, analytical comparison of the two engines, but Northwest's first report on the converted powerplant claims that operating hours per engine have increased 100%. Engine operating hours per powerplant increased have increased 70.5%, it is said.

The low-tension ignition system on the B-6 has boosted starting performance so that NWPA now operates 550 hr. by changing plug changes. With the old high-tension system of the B-3, the engine reports it was obliged to schedule plug changes every 100 hr. At times, it says, the scheduled changes were as frequent as every 100 hr.

Power limitations are the same on the B-6 as B-3 as far as takeoff, METO power and maximum cruise horsepower are concerned.

Cost of converting 45 B-3s was \$460,000—covering labor, ignition systems and other components, \$14 million worth of repair parts were furnished by Pratt & Whitney.

OFF THE LINE

Queen Charlotte Airlines sold 51 Avro Anson Mk. V to Aerovias Esso (Brazil) the aircraft was an unserviceable plane destined for cannibalization.

American Airlines will install dual VOR navigation equipment on its entire fleet of DC-6s and Constellation. Miami-based by Collins Radio Co., Cedar Rapids, the VOR equipment bought by American includes the 51R VOR receiver, 51V radio direction and navigation system. AAR has also ordered a number of 17M-1 (500 channel) VOR transmitters and 55-1 channel VOR receiver to replace all VOR-1 communication sets in its fleet, according to Collins.

Two new auxiliary contracts to rebuild aircraft now have been awarded by Thompson Aircraft Test Co., Inc. Inactive loss reports. One is from USAF, the other, from the Royal Canadian Air Force.

Flight Equipment & Engineering Corp. reports it has been awarded a contract for 1,500-2,000 aircraft parts to go to Boeing C-70s being modified by Ticon Aero Inc. Co. The parts will be sold upon request of the sales with the quick conversion of any part of the

AirWeek Picture Brief



NYA Makes Room for People

New York Airways' five Sikorsky S-55 helicopters were converted from freight to passenger-carrying units recently by Lockheed Aircraft Service International in its shops at New York International Airport. It took 500 man-hours and about \$7,800 per machine. Above, LARS mechanic checks out (inside by Flight Equipment and Engineering Co.) into new fitting, flight, machine sets, engine parts in position. Below, boarding converted engine for fast scheduled passenger flight in New York area (l to r): Robert L. Cummings, president of NYA; Robert B. Myers, Jr., U. S. Undersecretary of Commerce; Charles E. Kwasnicki, USN (Ret.), lighter-than-air expert and executive director of National Air Transport Coordination Committee; Robert Mann, N. Y. port commissioner.



aircraft from passenger to cargo use. New York Airways' five Sikorsky S-55 helicopters were converted from freight to passenger-carrying units recently by Lockheed Aircraft Service International in its shops at New York International Airport. It took 500 man-hours and about \$7,800 per machine.

NYA's Bureau of Aeronautics has purchased a Fairchild Aerostar Cessna (described in *Airweek* West June 5, p. 55).

Chil Aeronautics Administration has approved Arnold Gosses & Co. as a certified magnetic (Magnaflex), fluorescent powerplant (Zigflex), and X-ray inspection depot for aircraft and aircraft engine parts, according to the company. FEA says it is the first to be so approved in the New England area. Address: 164 Hampshire Street, Cambridge, Mass.

Flexibus Tool and Engineering Co. reports its Secta seats will be standard equipment on the 10 DC-7s purchased by Delta-CMS Airlines. Seats are stressed to take unusually high loads.

Goodyear Nylon Pileed fuel bags have been installed on a Lockheed Lodestar by Adkins Aircraft Service Co., Los Angeles. The installation, in one of Goodyear's own Lodestars, is expected to cut maintenance costs and reduce fire hazards from leaks that usually occur with integral wing tanks. Replacing the integral tanks with the Nylon Pileed bags and adding an extra bag in the outer wing panel increases the Lodestar's fuel capacity to 675 gal. An additional 550 gal. may be had by installing three more bags in outer wing panels, Adkins says.

Australian Carrier Plans Fleet Expansion

(McGraw-Hill World News)

McLennan-Australian National Airways—this country's pioneer and largest air carrier—is planning to replace its DC-3 passenger transports and expand its cargo operations in an effort to compete effectively with the government-owned Trans-Australia Airlines.

The expansion plans indicate ANA is recovering from the business competition it had suffered from Trans-Australia.

The order from the government to TAA last year to operate on a more business-like basis and its move to regulate conditions between the carriers came at a time when Australia National was beginning to find its own competitive position.

• **Element Possibility**—ANA sources report the carrier may purchase one of British Overseas Airways Corp's four-engine Hawkeye Page Heron 4s, the

the latest transport of luxury fittings and amenities. These passenger capacity for domestic routes.

ANA has been selected in Bristol, England, but Australian equity up to the baggage transport, may prove to be unworkable as domestic routes. Officials of the airline express doubts that the cargo potential of Australia is adequate for Australian needs.

There is a tendency within ANA, the sources say, to wait for British to produce another version of the Britannia and to operate with them with Boeing 747, DC-7s and Bristol 175 Freighters.

But Australian National still has not placed any definite orders, despite talks of its DC-7s in recent weeks. Officials report that the carrier will be forced to make definite decisions in the near future, pushed by the fact that TAA will be able to take delivery next year of an Airborne Viscount.

• **As Carlin's DC-7s**—Australian National's fleet problems may be solved to some degree at the end of September, when ANA operated Air Carlin's is scheduled to make operations because of financial losses, which it has entered as flying international routes to London.

The parent airline is expected to take over Air Carlin's DC-7s for freight and passenger flights on extra Australian routes.

New African Terminal

(McGraw-Hill World News)

Green-Air, large new international airport capable of handling planes up to 40 tons is slated for completion before the end of this year at Lusaka, Angola, Portuguese Africa. Its main runway will be approximately 7,000 ft long and 200 ft wide.

Installation of the latest equipment is planned.



TAXIWAY SIGNPOST

Cousins Co., Syracuse, N. Y., has devised a system of airport signs to direct aircraft from taxiway and approaches to hangars, ramps and loading docks. The 28-in. high signs are built to withstand the slightest contact with an aircraft. Installation costs are low, because the aluminum signs are designed for mounting on standard C&G low light bases (Type ERK).

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NEW AVIATION PRODUCTS



Douglas Puts Honeycomb Panels on Open Market

Douglas Aircraft Co. has entered a new market—manufacture and sale of aluminum honeycomb core panels for use by construction and other industries.

Douglas is producing Alucorex at a separate plant (65,000 sq. ft.) at Bell, Calif. Current output of 100,000 board feet is expected to reach 2 million feet within a year, with employment rising from 100 to 500 workers.

Alucorex is a nonsegregated kraft paper honeycomb that sandwiches between metal, wood or plastic facings, providing a structure with a high strength weight ratio, Douglas claims.

The product was developed in 1946 but had not been used almost exclusively by Douglas for its own manufacturing needs. The company plans to sell the panels in bulk wholesale lots to industries now related to aviation but not to other manufacturers of aircraft and stress employing the panels.

The company has used them in construction of padded machine beds, wing, cargo containers, pallets, floors, luggage racks and toolboxes.

A piece of steel of equal rigidity would weigh 16 times as much, estimates Douglas says. In addition to high strength weight characteristics, Alucorex panels are durable, flat and joint resistant and are said to have excellent corrosion and soundproofing qualities.



Disconnect Detaches With Pull and Twist

Douglas Aircraft Service is marketing a quick-disconnect for actuator rods that can be detached with a pull and twist. The stainless steel device is used on aircraft rods made by Liss, Inc. It eliminates disassembling rod ends and

enables them to be reconnected without adjustment. The unit is certified for civil flag activities of Lockheed C-119 Packets.

The device simplifies work in crowded installations and has been approved by Air Force and Civil Aeronautics Administrations, Douglas says. Douglas Aircraft Service, Inc., 50-17 Northern Blvd., Woodside 77, N.Y.



Flexible Connectors Permit Tubing Misalignment

Flexible fluid line connectors for aircraft tubing that permit a 5-deg misalignment are being produced under license from Northern Aircraft by Rubber-Tek, Inc.

The design is said to reduce coupling weight by 75%, and permits quick disassembly and assembly. The connector can be used with tubing from 1 to 4½ in. o.d.

The connectors are said to meet or exceed all requirements of NAS12 specifications, including fuel resistance, temperature from -65 to 160°F, and pressure from 160 psig to 251 in Hg vacuum.

The leading tube ends of the connectors are joined with a seal assembly mated from special Rubber-Tek compound, applied to one end of the tube. The connection is secured by a clamp assembly with two hose clamps riveted to the body.

Rubber-Tek, Inc., Garden, Calif.

New Variable Scale Gives Engineers Fast Answers

Enter answers and carry new and valuable shortcuts in solving the mass of graphical-mathematical data involved in aviation statistics, equipment and test activities are claimed possible with Gerber Scientific Co.'s engineering aid, the Graph-A-Logue.

This instrument is described as a greatly improved version of the company's earlier Model A Variable Scale (Aviation Week June 16, 1952, p. 31).

Like the Model A, the new computer performs calculations directly on graphs, curves, recordings and other mathematical

presentations. It has the same coil-spring expanding scale whose ends can be extended to any movement spacing desired and moved over the chart for direct reading, measuring and graphic plotting.

The Graph-A-Logue has 18 scales (previously 12) for the Model A; prominently numbered on its face for use in conjunction with the expandable scale, including those for logarithms, probability, trigonometric, power, linear and reciprocal computations.

• **Direct Read Linear Answer**—The new device handles nonlinear facts from directly, something never done before in a tool of this kind, according to H. J. Gerber, developer of the new slide-rule device.

Special graph paper sheets, supplied in pads, can be placed on the face of the instrument and old data superimposed, allowing the user to work with virtually any arbitrary function. This enables it to be used in reading milligrams or microsecond curves where a non-linear collection is necessary. Gerber notes. Measurements can be plotted quickly and function of curves following any irregular pattern can be interpreted, Gerber says.

Gerber Scientific Instrument Co., Hartford 3, Conn.



One-Hand Gage Checks Wide Range of Tensions

A one-hand gage that checks spring tension or machine force from 4 to 2,500 grams has been developed by General Electric Co., Ltd., England.

The gage is preset to the required tension by means of a loaded resistance coil wire. End of the gage operating strip is applied to the point where opposing force is to be checked. Deflection of the operating strip in conjunction with movement of the coiled element indicates the opposing force is equal to the gage setting.

The calibrated paper has zero no friction. Knife edge bearings provide negligible friction, and gravitational effects are counter-balanced, the maker notes.

There are six gage models available covering the following ranges in grams: 4-24, 16-64, 50-250, 100-500, 200-1,600 and 500-2,500.

Johns Corp., 38 Charles St., Cambridge, Mass.



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efficiency in using jet engines or planes in service. It can be as much as \$100,000. And even a small jet can be seriously damaged. . . . and, of course, being so can be used. Medical advances in the past few years have shown us that the health of the engine is the key to the health of the plane. . . . and, of course, being so can be used.

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AIR TRANSPORT

CAA Plans to Increase Airways Service

- Murray sets up program boosting traffic personnel.
- Slashed budget eliminates new construction money.

By Lee Moore

Civil aviation policies now jelling at the White House and Commerce Department call for considerably more agency changes than the publication policy and budget strategy at Civil Aeronautics Administration.

Commerce Undersecretary Robert Murray will continue to call most of the shots (AVIATION WEEK May 30, p. 15, June 1, p. 18).

CAA Budget Cuts-Senate last week went along with the House and Commerce Departments and eliminated all new construction money for federal and state and local airports before Congress adjourned. Murray said the program had been "badly mismanaged" and may be of questionable value anyway.

Total CAA 1974 appropriation of \$155 million is 7% less than actual 1973, 31% less than the Truman request (\$200 million) and 1% under the Eisenhower request. Impact of the 7% cut below last year is greater than it looks because almost traffic congestion keeps growing, and CAA must raise the new facilities as they are built.

Falacy Challenge-Murray reacted to Newhouse Weekly issue on airports in preparation and some already underway. He said there will be "a lot more news by October and December."

Adjustments of civil aviation regulatory policy, budget, personnel and safety policy to the new Administration's viewpoint are in the works. Phase one is to get the government out of all activities that can be handled satisfactorily by private business and/or local and state governments. That the program is not wholly negative.

Positive Progress-Murray told Aviation Week he plans to make substantial increases in services considered properly defined in scope. Here are some indications of the positive program Murray is preparing:

• More services personnel: The new budget calls for more personnel training federal aviation this year than last. These discipline interstate air business are CAA's primary service responsibility.

Commerce Chain of Command

Chain of command in Administration's civil aviation policy:

The President and his Cabinet, including Secretary of Commerce Roswell W. Wilson, are in direct's seat.

Robert Murray, Commerce Undersecretary for Transportation, comes next. He coordinates overall U.S. transport policy, has direct responsibility for operation of Civil Aeronautics Administration, Maritime Administration, Bureau of Public Roads, Weather Bureau, Coast & Geodetic Survey. Murray also is chairman of the civil-military-State Department Air Coordinating Committee for inter-agency aviation policy.

Charles A. Deering, newly appointed by Murray as Deputy Commerce Undersecretary for Transportation, will have direct responsibility over studies leading to the formulation of government-wide

transportation policies and programs," according to Murray. Deering was a top Brookings Institution staff member concentrating on transportation, and has been involved in Murray since March.

Civil Aeronautics Board independently adjudicates airline and safety cases. Its overall economic, budget and safety policies are subject to Administration's guidance. Donald Ryan is chairman, Harold Derry is the first Eisenhower appointee on the Freeman Board, the first Republican member, Chas. Cawsey, was appointed by Eisenhower at the recent test.

Fred R. Lee, Civil Aeronautics Administrator, applies safety standards set by CAB, builds and operates the network, and administers civil aviation safety and development policy set by Commerce Department.

Many legacy costs of items are already overruled, and traffic continues growing nearly 25% per year.

• Better for better towers: Controllers and information now work eight-hour shifts, but shifts of airway and airport control under instrument conditions are often serious deficits in winter evenings after hour losses. Murray and CAA administrator Fred Lee are working with Civil Service rules to find a plan for better shifts in hot periods, with the extra personnel on standby duty in good weather.

• Better weather reports: A new program, now in its initial stage promises considerable improvement in serious weather reporting, especially to non-civilian users.

• Local impact issues: Murray said Congress to eliminate all new money from the federal airport program this fiscal year. Port level implications of this issued substantial House Senate conference differences and narrowed in Congress' across-the-board program.

The Administration may try to eliminate federal aid to airports for fiscal year 1975. Port level implications of this issued substantial House Senate conference differences and narrowed in Congress' across-the-board program.

Territory Administration building is that removal of federal and type delay, overhead and interference will

free local capital, initiative and superior knowledge of local problems, eventually resulting in more and better airport construction where it is really needed.

• New Washington airport: Commerce Department recently won Air Force agreement to share Andrews Field with CAA for overflow active traffic from planned Washington National. The \$100-million previously proposed Burke Airport plan is shelved. CAA planners were so enthusiastic over the potential of Andrews for civil traffic that they drew up a blueprint of what an all-civil Andrews could do for Washington by 1975. This nearly caused DCAF to withdraw its sharing offer, but Murray restored confidence at Cabinet level.

• Convoluted regions: CAA regional administrations recently were consolidated from seven to four in continental U.S. to reduce excessive overlap, confusion and "multiple jurisdiction."

• Remote activities: Commerce often has failed to push for more-advanced and safer agency standards on some air transportation. Civil Aeronautics report among and U.S. area.

This has changed. Extensive Murray proposes aggressive support of the

Fiscal 1954 Funds for Civil Aviation Civil Aeronautics Administration

	Fiscal 1953 appropriations	Fiscal 1954 appropriations	Fiscal 1954 revisions	Fiscal 1954 revisions
Salaries and expenses	\$105,794,000	\$120,290,000	\$101,510,000	\$121,800,000
Construction of air transport facilities	13,561,000	20,000,000	1,000,000	1,800,000
Technical development	1,167,973	1,163,000	1,113,000	100,000
Washington National Airport (A) Operation (B) Construction	1,356,000 20,000	1,350,000 405,000	1,350,000 405,000	1,350,000 400,000
New Washington Airport		1,600,000		
Federal-aid airport pro- gram (for the new pro- gram)	14,311,134	10,000,000		
Federal-aid airport pro- gram (for the old pro- gram)	9,000,000	9,250,000	22,700,000	22,700,000
Alaska Airport opera- tion	450,250	1,100,000	1,877,000	100,000
Air Navigation Develop- ment	1,710,000	4,000,000	1,710,000	1,000,000
Airport plans for dam- age by military serv- ice	1,021,425			
Total	\$148,022,632	\$206,223,000	\$168,927,000	\$218,900,000

Civil Aeronautics Board

Salaries and expenses	\$3,000,000	\$3,500,000	\$3,000,000	\$3,500,000
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airline's plan for more "Conquest" type long-range jetliners (stations around the Atlantic, North America, and Africa). "Lone" type is favored by the military, so the Civil Aeronautics Boarding Committee recently took a vote, initial position that it would "not oppose" the Conquest. Commerce now proposes an agreement to U.S. stand in International Civil Aviation Organization in support of Conquest.

• **Safety inspection.** Murray and Lee are now trying to fix federal responsibility for safety inspection on airlines and other operators. Recently two more CAA reports generally stated responsibility, because most jet airlines have a maintenance base in one region, base office is another.

• **Joint report on.** Until now, separate between military and civil over joint use of airports have been drafted by joint offices on each in divided airport and time.

Murray now has no argument that Air Coordinating Committee's by action on the formerly taken "joint

use panel" by down rules for joint use — then stick to the rules on individual case.

This may enable civil users to plan with more confidence.

• **CAA's New Budget.** Here are high lights of the fiscal 1954 budget drafted by Congress last week.

• **Ship & expense** is virtually the same as last year—with more for always operation, less for "education," "advice," and control office.

• **Airports facilities construction money** will be half last year's. More cuts from the Western program are airport construction, make \$1.5 million, housing and utilities for CAA and Western Bureau main (mostly in Alaska) \$2.2 million, reduction of communications stations \$0.7 million, and report of Alaska communication building fields \$0.1 million.

• **Technical development center** at Indianapolis is cut one-third from last year.

• **Federal aid for local airports** has \$12.7 million to liquidate poor commitments

of the old administration but nothing for new construction.

• **Airways research program** of the civil aviation Air Navigation Development Board is slowed down again—this time from last year's \$1,750,000 to \$1,645,000 for fiscal 1954. ANDB says it will slow down the various projects rather than cut any out, because they are interdependent.

Mexico Plans New Military Air Bases

(McGraw-Hill World News)

Mexico City—All of Mexico's military airports except the new Santa Lucia Air Base near here and Zapopan Field near Guadalajara are in extremely poor condition, Mexican Department of Defense reports.

The department says work will begin immediately on military air installations at Tepic in Southern Mexico, Ensenada, Lower California, Hermosillo and Mazatlan Fields on the Pacific Coast and Comandante Field on the Yucatan peninsula.

Work is being rushed to complete the new Santa Lucia Air Base, which will be the country's principal military airport.

A two-mile runway and taxi strips have been completed.

PAL Leases DC-3s, Resumes Service

Pan American Lines resumed 24-passenger DC-3 service Aug. 1 as the initial phase of a program to replace completely its 16-passenger Martin 2-02s by November.

The carrier initially began DC-3 service in 1945 and converted to the 2-02s in June 1951. Due to transportation of 2-02 service Panam filed the additional and pay to support operation of the more expensive equipment, but Civil Aeronautics Action barred the request.

Following CAA's action, the airline cut back schedules to two-thirds and, according to president Robert J. Smith, lost \$1,000 daily. With its newly obtained DC-3s, PAL is immediately increasing its daily flights to 1,700 miles.

By Aug. 10 it will be flying approximately 90% of its former mileage.

Panam is offering the 2-02 to the sale and leasing. DC-3s from Northwest Airlines, Inc., Ft. Worth, Tex., has been eliminated from Eastern Air Lines' transports powered with Wright R3400 engines, but also probably to get new from United Air Lines' DC-3s with Pratt & Whitney R3350 engines.

SAAB-29 a top-line jet fighter available for export **NOW**



The Saab-29 takes off with a heavy armament and just had for a long-range attack center.



Forming the backbone of Sweden's fighter defense the Saab-37 is here represented by a squadron from the U.S. Air Force, and many more are being produced at a fast rate.



Quick delivery is something quite unique when talking of modern jet fighters. Too often, with aircraft are years away from operational service. The Swedish-developed Saab-29, however, represents a truly outstanding exception from that "rule".

The Saab-29 has been delivered in large quantities to the Royal Swedish Air Force, and many more are being produced at a fast rate.

Having a top speed of over 650 miles per hour (over 1,050 km/h), the Saab-29 is

equipped with a powerful jet engine of internationally proven type. The aircraft itself has a very rugged design and a modern standard four-engine armament of great firepower and exceptional maneuverability.

The Saab-29 can be used for a variety of military duties including interception, attack, and reconnaissance. For a sweeping jet, the Saab-29 has very moderate runway requirements.

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Merger of Major Airlines Up to President

Washington, growing is about even as whether Eastern or National Airlines will win Presidential approval to buy Colonial. But most observers believe Eastern will win, although they won't bet on it.

The question before the government is whether Eastern or National Airlines will win Presidential approval to buy Colonial. But most observers believe Eastern will win, although they won't bet on it.

However, if the President and Civil Aeronautics Board vote "yes," the Administration will receive considerable publicity because the CAB is currently severely limited by the CAB's decision to approve the merger. Eastern was its strongest ally (Aviation Week June 22, p. 90). Critics would say that Eastern not only forced National out of the picture by refusing financial aid, but also acquired "selective" control of Colonial and then was administering approval to improve lobbying power.

• **Top-up Decision**—Here is how observers see the relative advantages of Eastern in National at this political-financial battle for Colonial's New York, New York and Montreal routes.

• **Eastern advantages**. Eastern's contract requires only the signature of the President to remove the government of about \$1 million subsidy per year—immediately.

Merger of Colonial with other Eastern Airlines would achieve the same ends—improve the buyer's costs structure and cut industry without directly harming the other carrier.

Colonial, though smaller than Eastern, has one of the most lucrative route systems in the nation. If Eastern gets Colonial, National will continue to make one of the highest profit returns in the industry.

National can buy Northeast Airlines if it wants to expand north of New York.

Eastern was high bidder for Colonial in the public offering made by Colonial after its stockholders declined the National agreement. It was a square deal, Eastern says.

For the government to "interfere" in normal business dealings, namely to help a "smaller" business is contrary to the new Administration policy, Eastern says.

CAB examines on this case already has found that even if there was a technical violation by Eastern, the prohibition prescribed by law does not actually deny it of the contract involved.

• **National advantages**. National signed the original merger agreement with Colonial.

National says there is no apparent reason why CAB should reverse its previous preference for NAL-Colonial merger.

National believes that it will pay no price. CAB may prescribe for specific acquisition of Colonial. If the President and CAB deny the Eastern deal, Colonial stockholders would probably accept National at the government-approved price.

National alleges that Eastern defied the government and deceived the public of subsidy relief a year ago by illegally acquiring effective control of Colonial, defeating the original merger contract, and arranging the company into accepting Eastern's offer. Government action of such an action is unconstitutional, National alleges.

National needs another route north of New York. Eastern already has the past city of Boston, plus some other New England cities.

National and Eastern are both north-south carriers, with Miami their chief terminal. Eastern has the same New York-Florida route that National has plus Boston, Chicago, St. Louis and many others.

Since route franchises are equally government-owned, proper government procedure would be to speed the new great award.

Senators Want Lusty Nonskeds

Small Business Committee recommends five-point program that includes 14 roundtrip flights a month.

By Katherine Johnson

Senate Small Business Committee, charging that Civil Aeronautics Board investigations of the role of nonskeds in air transportation with one hand while its other hand is engaged in potential elimination of the industry, has laid down a five-point program to keep the industry alive and happy.

The committee, headed by Minnesota Sen. Edward T. Healey, denounced the complaint of the scheduled lines that air traffic is a "kond pac" and that the nonskeds are eating into their slice.

"The question is no longer what portion of a fixed pay air company will get, but rather how much the entire pie can grow," the group declared.

History. Although the 1918 Civil Aeronautics Act was aimed at protecting a young industry from competition by keeping it alone strong and then opening the door to new companies to be added to the field, the committee said, the way that has happened over the past 15 years.

The volume of traffic over trunk routes has increased 15-fold. The "trunkline" financial position has strengthened and in 1952 four of the ten common carriers with the highest passenger revenues were airlines: American, \$156 million, United Air Lines, \$728 million, Eastern Air Lines, \$535 million, Trans World Airlines,

\$109 million. Pennsylvania Railroad's \$116 million total second and New York Central Railroad's \$124 million total fourth.

Yet, the Board has refused to estimate that any new route to perform common carriage at passenger on the trunk system. Instead, the number of carriers has been reduced from 15 when the act was under consideration to a probable 12 by the end of 1953.

Recommendations.These are the five recommendations the committee made to CAB:

1. **Issue a temporary regulation permitting nonskeds to fly 14 roundtrips a month between any two points.** The Board should permit those flights to be pooled over a year's period so the carriers could handle traffic demand in peak months. The carriers, without limitation on frequency or regularity of service, should be permitted to move airlines, personnel and mail (without subsidy) under government contract.

2. **Grant temporary exemption to fare or fare nonskeds to engage in regular contract route-type service, limited to three years.** Possible future segments would include New York-Boston and New York-Orlando, where existing coach service is inadequate, as Boston, New York-Washington, where scheduled carriers have refused to offer service. Eastern New York-Washington coach fare of \$5 compares with present

regular fare on this route of \$144.00, composed of 100 cents trans-Atlantic, 50 cents domestic.

The same doctrine should be used in measuring the merits of the irregular as in judging the certificated carrier.

Authorize regulations to serve as an clearing house as to exchange for the irregular carrier in providing charter service and common carriage. The act requires that the irregular carrier serve for the minimum benefit of the public.

In addition to these, the subcommittee that worked on the report, based on lengthy hearings held earlier this year, included Sen. Robert Hendon, Sen. Leverett Hunt, George Southall and the late Charles Taylor. The report likewise was aided by the full 11-member committee.

ACFA Approval.In Los Angeles, former Sen. Claude Pepper, joined several of the Air Coach Transport Association, declared that the irregular carrier fully approved all the committee's proposals that nonskeds be permitted to schedule 14 roundtrips a month between two terminals.

"We could live under that," he said.

Pepper's statement that the nonskeds are not attempting to displace or discredit the certificated carrier but are "little fellows trying to get a legitimate place in the business." The Senate committee's suggestion of 14 roundtrips a month would not take business away from certificated carriers, he said, but would help encourage new passengers by putting the nonskeds on a fair basis.

Irregular carriers, and the donor Florida senator, are attempting to create new trade for the industry. "The man who rides the bus on the highway still feels the airplane is his right man. We are trying to correct that impression," he said.

New Subcommittees.Declaring that keeping the door open for an expanding scheduled air transportation system is "in the public interest no less than the interest of the small business segment of aviation," the committee pointed its hopes on the newly appointed Commerce subcommittee.

Headed by Sen. John H. Chafee, to make a key contribution by organizing the administration of the CAA set up by the Board, with particular emphasis on the problem of the entry of new operators, such as transportation and the need for a revenue enforcement police on the part of the Board.

Mild reaction on this route of \$144.00, composed of 100 cents trans-Atlantic, 50 cents domestic.

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only had last summer days at the airport for planes."

Many officials that several hundred complaints about irregular air carriers and budget agents had been received by the Civil Aeronautics Board in Los Angeles—some by mail, some by word of mouth.

He described them as little more than "bawling babies" permitting a passenger to go to the airport and search for his own transportation.

Agony Practice.The Better Business Bureau claim that the majority of complaints received involved misrepresentation and financial practices of ticket agencies which sell space on irregular carriers, rather than quality of service of the carriers themselves.

Under consideration by George Beahm, counsel for several nonskeds, Beahm opposed the belief that a direct contract between the air carrier and the public—permitting the nonskeds to sell their own tickets—would help to stabilize irregularity and clear up difficulties with the public, a difficulty which he said was plaguing the entire airline industry a bad case.

Five-Night Bakers.On the testimony followed similar lines that it was the ticket agencies causing most of the trouble. "I think the brokers are using the carriers, rather than the carriers using the brokers," commented Dan Koller, district attorney of San Diego County, as he described "unscrupulous brokers on the order of San Diego."

Unscrupulous.That the use of the instance of endorsement by an irregular carrier itself, Koller expressed his belief that "if they had direct sales and direct contact with the purchasers of transportation, it would eliminate the problem."

Koller told of five night ticket brokers who give kickbacks to ten drivers, pay commissions to military personnel, and climb aboard the line in the line in an effort to drive up business, sometimes for non-carrier airlines.

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Aircoach Fares May Climb to Five Cents

Some aircoach fares may increase one-fourth to one-half cent per mile. Dr. 51 when the present tariff was made by Civil Aeronautics Board.

Executive branch notes that the \$90 transportation fare was expected to remain unchanged, however.

CAB promised to decide by Sept. 30, if possible, to give the airlines time for orderly adjustment of services, rates and advertising.

Looking.Operations—Passenger airlines are five-cent-a-mile rates for highly-dense coach planes during normal travel hours, but with a mile for any plane operating all hours, except those referred to in the industry as night class.

American, National, Trans World, United and Eastern Air Lines are looking for a new and half-cent day-coach operation, which will include day, night and Capitol air loading from five-cent-a-mile night operation.

Increased Costs.Some airlines say lower night rates will be based on more than a half-cent a mile. CAB said it had not decided what form to recommend to the full Board yet. But a recommendation must come soon because the Board plans to rule by Sept. 30.

Scheduled Problem.A separate issue is the problem of how to price tickets sold for scheduled segments of through nonstop flights.

CAB is thinking this out in a formal group with American and Eastern. The Board recently stated in an advisory opinion that the practice of charging first class rates for scheduled flights (such as a mile) on the Boston-New York and New York-Washington segments of their through service flights.

A rate of about five cents a mile may be accepted by CAB, but the carriers have not yet offered to come down that far.

Japan Gets C-54 Parts

(McGraw-Hill World News)

Manila-Philippine Air Lines has secured permission from the Philippine government's Export Control Commission to ship \$425,000 worth of Douglas DC-4 spare parts to the Japanese Airplane Manufacturing Co. Ltd., Tokyo, which will use them on Japan Air Lines' fleet of C-54s.

Permission was required because strategic materials may not be used from the U.S. unless they can be shown that they are no longer required. PAIL said it is flying planes to airline operators in the United States, India and Italy.



GERMANS HERE TO STUDY U. S. AVIATION

In the U. S. to study Civil Aeronautics Administration facilities, methods and equipment that might be applied in modernizing their country's aviation. German officials are now conferring with CAA administrators Fred B. Lee, from left to right: F. Heinkel, director of air transport services

of the German Federal Transport Ministry, Leo K. Meier, consultant for a German discussion group, and G. T. Allen, director of transport services of the Transport Ministry. On the agenda was a trip to CAA's technical development and evaluation center at Dayton, Ohio.

LETTERS

Pinsecki's Crackup

"Industry Observer" in the June 1 *AVIATION WEEK* states, "Recent criticism of a Pinsecki H-21 helicopter on the ground at Miraflores, Peru, belatedly drew to a close, which built a rocky road to a point where both sides were satisfied."

In this particular case, an H-21 helicopter was being tested for ground clearance, in which the pilot went through every known stress in flight as well as the fault-finding part of the test. Apparently the helo, on one of the structural engine compartment doors failed, negatively changing the structural characteristics of the helo and allowing the test to continue. The flap is not an advanced component, which resulted in damage to the tail and the rear rotor blades. The front rotor blades were not damaged in any way nor was the cab or cockpit area of the helicopter.

I think you can see from this that a completely different viewpoint is expressed in *Industry Observer* concerning that the H-21 is subject to ground clearance. Naturally the helicopter as per test stress was not subject to ground clearance, except in the case of a failure malfunction of parts. In this case it was entirely self-inflicted as a test program in which a brand new type of rotor blade was being tested because it is our policy to do this with any new components in the rotor system.

Actually, it is an Engineering Department's finding that we carried the rotor blades from Germany and the helicopter has been known to be broken where, which would automatically break up the ground clearance condition.

It seems a shame that no thoroughness in testing is presented to such a manner that people will be inclined to believe the H-21 is worth to subject to ground rotor stress under normal conditions.
Robert J. Peck, Vice President
Pinsecki Helicopters Corp.
Miraflores, Peru

Pilots & Fan Markers

It strikes me odd that Mr. McCulloch of Ciroco Corp. (a manufacturer of recreational radio equipment) would make the statement (*AVIATION WEEK* July 15, 1971) that "pilot contact does not depend on the high frequency radio system, which must tell them their position in the glide path—usually because there is no radar signal. As a result, it is standard procedure for all air force pilots to use the low frequency receiver (beacon) to definitely locate their position on the glide path with respect to distance from the field."

Mr. McCulloch should know that pilots can (and do) depend on the high frequency radio markers. Not only do we use the visual signals, but also the radar signals. As a result, all but pilots at many airports are too foolish to go below minimum crossing altitudes unless back radar and visual signals are received.

Furthermore there are several ILS landing systems which do not have ground stations at one or more of the marker beacons either, consequently we do not need (except) visual cues position by computer beacons at these fields.

ANTHONY VANDER
3305 W. 118th St.
Inglewood 1, Calif.

More on Fuel Gages

Having been for 12 years a field service engineer in many parts of the world for well-known manufacturers of both fixed and experimental-type aircraft fuel gages, I feel qualified to make the following brief comments, having reference to Mr. Scher's letter appearing in your July 6 issue.

1. The Liquidmaster Governor Fuel Gage obviously being used as its jet engine model is the only jet engine jet engine-governor fuel preference regardless of fuel density.

2. MFC-G specifications for operation from only engine compression based on SG/MFC/G but not adequate rapid rate lowering between a fuel's density constant and its density.

3. The Liquidmaster Governor Fuel Gage does not depend on any such amount of accuracy and as customer for fuel density accuracy is made by a fuel density constant device known as the Liquidmaster.

4. The jet can also be incorporated as a reference gas system in gas density constant fuel calculations, which is not being obtained in reference-type gages nor such boats said.

5. Should the jet engine referred to above, Liquidmaster Fuel Gage are currently being installed on 15 other types of aircraft.

6. Properly designed fuel gages will give a good amount of themselves if not in use and as providing the origin number of gas, most at the right location and when required properly.

7. Properly designed fuel gages are much improved over the types sold by a number of manufacturers several years ago, but have not been as accurate long enough to delay some that still remain.

RAYMOND
Field Service Engineer
The Liquidmaster Corp.
Long Island City 1, N. Y.

Wide Angle Lens?
I have issued a good deal of discussion in my magazine about stability on air transport and helicopter cockpit.

Let's face it. Visibility is extremely important but I wonder whether a wide angle lens system could not be designed and so mounted inside of the cockpit as to give vision forward and down and upward and back.

ROBERT G. HARRIS
Oakland 1, Calif.
2744 Buoy Rd.

AF Safety Research

ANTHONY WOOD's article June 29 by Armando Macchiari, "Air Force Research Can Go Right," is a nice tribute to a group of very hard working Air Force personnel who are beginning to see results from a well-planned system. Mr. Macchiari did an excellent job as has account of this work. I am sure he was assigned, in an effort to see connected such military aviation.

As chairman of the Design Safety Committee of General Electric, Fort Worth, Tex., I have been so pleased to be closely associated with the Air Force program. All members of aircraft must realize the importance of safety and accept the responsibility of designing it into the aircraft. This, of course, is not new, but rather a continuing thing which demands attention.

C. S. GAUER
Chief of Service Engineering
General Electric, Fort Worth Div.
Fort Worth, Tex.

Report on Plastics

We would appreciate someone, perhaps in two short of the article, "Why Engineers Are Using More Plastics," by Irving Shoen, in the June 15 issue. This material is requested for our Engineering Library for use by our engineers and other personnel.

F. R. HAZEN
McDonnell Aircraft Corp.
P. O. Box 116
St. Louis 1, Mo.

If such is available, we would appreciate a report of your article "Why Engineers Are Using More Plastics," by Irving Shoen, in the June 15 issue. This material is requested for our Engineering Library for use by our engineers and other personnel.

Praise

We express our appreciation for the article in the June 15 *AVIATION WEEK* by Irving Shoen, carrying the work on the motor blade. It is most to have been used by practically everyone in the aircraft industry. It is very kind comments are from Wright Aero, Westborough, Conn.; Elbert, Republic Airlines, Greensboro, and several others.

ELBERT WALKER, Director
Comcrafts Testing & Research Laboratories
Greenboro 1, Ohio

All of our aviation people here at Republic think that your June 15 *AVIATION WEEK* story by George Chastain was the best thing yet to appear on the subject. May I offer our thanks.

F. D. FRIEDMAN, Manager
Advertising & Public Relations
Bristol-Kelco Div.
Bristol Aviation Corp.
Baltimore 4, Md.

NEW!

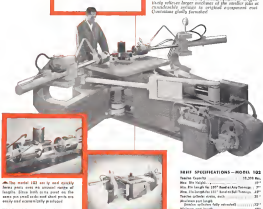
A one-man

Stretch-Wrap Former with instant work-length adjustment!

HUFFORD

MODEL 102

CAPACITY 5 TONS



With lens fully extended, Model 102 can be 72" long, to be extended

Designed to produce parts in an unusually wide range of work lengths, this new Hufford model 102 offers many new working features

ONE-MAN OPERATION—All loading and forming functions are easily controlled by a single operator. **INSTANT WORK-LENGTH ADJUSTMENT**—Design has been reduced to its simplest form. Sixty work-length capacity is varied merely by extending or retracting slider rods to desired spacing between arms.

WIDE RANGE OF LENGTHS—Parts as short as 12" or as long as 72" may be accommodated.

EXCELLENT WORK-LENGTH CAPACITY is offered as a possibility by operating two machine rods by cable, disconnecting middle arm of each. Tension cylinder capacity remains the same.

SLIP-THROUGH ARM MOVEMENT—Arms may be automatically stopped at any portion of their travel by electric control. Tension pressure is applied by manually operated lever.

The new model 102 is Hufford's latest development. Facilitates manufacturing of existing equipment. It effectively replaces larger machines of the similar size at reasonable savings in original equipment cost. Operators gladly furnished.

BRIEF SPECIFICATIONS—MODEL 102

Machine capacity	5 Tons
Machine length	72"
Work length	12" to 72"
Work length capacity	60"
Machine width	48"
Machine height	38"
Machine weight	1200 lbs.
Machine power	1/2 HP

HUFFORD

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Burien, Oregon 97001



EXTREMELY FAST CLIMB RATES are possible on F-86D Sabre Jets equipped with new G-E afterburner fuel pumps. The after-

burner of the Sabre's jet engine gets vapor-free fuel from its new G-E pump. "System complexity" is eliminated.

Why North American Chose G.E.'s Afterburner Fuel Pump for F-86Ds

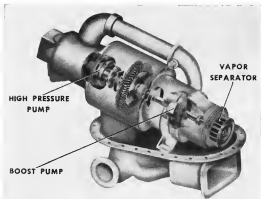
EDWARDS AFB, CALIF.—A spectacular new light-weight afterburner fuel pump that combines in one unit boost pump, vapor separator, and a high-speed pressure pump will soon be installed in North American F-86D Sabre Jets.

The G-E "3-in-1" pump recently completed climb, level speed run, and negative "G" operation tests here. Mounted inside F-86D fuel tanks, the pump replaces a heavier and more complex system which involved combinations of boost pump, afterburner pumps, and asso-

ciated piping and wiring. When a pilot requires thrust augmentation, the new "3-in-1" unit responds *instantly* to supply the required vapor-free fuel.

Operated on air supplied by the Sabre's jet engine, the pump can be turned off when the afterburner is not needed. This eliminates "recirculation" and its accompanying energy loss. Automatic aerodynamic overspeed protection is built into the pump through the use of a unique nozzle and turbine configuration.

An illustrated bulletin that describes the pump's many advantages and design details is now available. Send the coupon below to Section 210-76, General Electric Company, Schenectady 5, N. Y.



CUTAWAY VIEW shows unique dual-rotor turbine wheel design. This combines required low-speed boost pump operation with the advantages of a high-speed centrifugal pump—all without complex reduction gearing.

You can put your confidence in—

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Section 210-76
Schenectady 5, N. Y.

Please send me your bulletin GEA-5871A, Aircraft Afterburner Fuel Pumps.

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